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NEWS SUMMARY

THE ENGLISH JOINERY MANUFACTURERS' ASSOCIATION has recommended members to quote firm prices, subject to conditions, for their products. p. 84

THE RIBA COUNCIL has decided not to sponsor a new organisation of a Trade Union nature. It has asked the Salaried and Official Architects' committee to report on how improvement of employment conditions of salaried architects in official positions may best be secured. p. 86

A SCHOLARSHIP for the study of South American architecture is offered at the AA. p. 89

AN ARCHITECT whose membership of a professional organisation had lapsed but who still used the affix, has been held guilty of fraudulent misrepresentation. p. 89

A HANDBOOK, "New Homes for Old," issued by the Ministry of Housing and Local Government, deals with some of the technical problems which can arise in carrying out conversion schemes. p. 94

LOOKING AHEAD

WITH the abolition of licensing the building industry has found itself free of outside controls for the first time in 14 years. In future the only controls it need contemplate are those which it may have to impose upon itself. The New Year Messages which we publish this week from Ministers of the Crown and leaders of the architectural profession and the building industry all underline, by implication if not in precisely the same words, the great size of the building programme and the urgent need for increased productivity and reduced costs. In other words, if a little reading between the lines is permissible, licensing must not be replaced by licence.

Though controls have gone, priorities remain, and the greatest of these still is housing. The building industry as a whole—and a special word of congratulation is due to the manufacturers of materials—has exceeded all expectations in housebuilding during the past two or three years; but an immense programme of work lies ahead, not only in the building of new houses but in the modernisation of older properties and, especially, in slum clearance. If the competitive demands of general building either were to force up prices or to reduce the volume of housing work, there would, undoubtedly, be a threat to the industry's regained freedom. This need never happen. Productivity, by means of the agencies with which the industry in all its branches is now becoming familiar, is the key to the problem. The one thing that can be said with certainty (and it often has been said) is that in the foreseeable future no one need fear working himself out of a job, though he may foolishly price himself out of one.

But it is not only with quantity that the industry needs to be concerned; quality is equally important. The old standard of craftsmanship must be recovered. The leaders of the industry are fully alive to this and much is being done to further apprenticeship and technical education in the schools, not only to produce good craftsmen, but also those recruits for the supervisory and managerial branches upon whose knowledge and ability the future efficiency of the industry is going to depend.

Skilled craftsmanship is the responsibility of the builder, but the opportunity for *fine* craftsmanship that of the architect. Is he going to provide more of this in the near future? Signs are not wanting that he is. The public is tiring of austerity in architecture as it tired of austerity in the more obvious essentials of life. Prefabrication and mass production are here to stay, but there is bound to be an increasing demand for specialised buildings calling for fine craftsmanship. The new PRA has recently voiced that demand with great vigour and eloquence. Whether he is right in believing that we have to go back in order to go forward is, perhaps, open to argument. In any case, he is in the excellent company of Mr. Micawber, who remarked: "You find me fallen back for a spring; and I have every reason to believe that a vigorous leap will shortly be the result."

May we all make a vigorous leap in 1955!

OUTLOOK, 1955

FOLLOWING are New Year messages from Ministers of the Crown and leaders of the Arts and Industry:

From the Minister of Housing and Local Government

I WELCOME this opportunity to thank the building industry for their splendid achievements during the past year.

We continue to have a huge programme of work ahead of us. In particular, there is scope for all types of house-building—council houses, private enterprise, slum clearance and modernisation of older properties.

If the builders go on applying themselves with the same zest and energy to their task, as I am sure they will, there is every prospect that 1955 will be another record-breaking year.

Duncan Sandys

The Rt. Hon. Duncan Sandys, PC, MP, Minister of Housing and Local Government.

From the Minister of Works

FOR the first time for 14 years the industry celebrates the New Year unfettered by controls; this has been made possible by the steadily increasing output

The Rt. Hon. Nigel Birch, PC, MP, Minister of Works.

of both the building and civil engineering and the building materials industries. I should like to take this opportunity of thanking all sections of the industry for their co-operation during the difficult years of control; their help and advice was of the greatest assistance to my department in administering the licensing system. Friendly contacts with the industry were one of the happier results of controls and, although independence has now been restored, I look forward to maintaining this relationship and to continued partnership in such fields as research and technical advice.

The principal problem now is costs—I hope that employers and operatives will combine to keep these down. The adoption of modern equipment and techniques, of incentive payments related to output, and of detailed pre-planning and site control should increase productivity and reduce costs. Only if its prices continue to be acceptable to prospective building owners will the industry reap the full benefit of its hard-won freedom.

Nigel Birch

From the President of the Royal Academy

FOR 1955 our thoughts turn, quite naturally, to the rebuilding of London. Cities have their beginnings, their virility and their prolonged maturity. Unlike human beings they have fuller opportunities. Rome is the greatest example of this permanency; Paris has perennial feminine charm; Moscow retains memories of its burning in 1812; Madrid is still in the virile stage; and so these brief descriptions might be extended.

We are, however, concerned with the imponderable City of London, whose boundaries cannot be exactly defined, whose future is closely related to western civilisation. London, beyond question, is the stronghold of human desires, the refuge of the oppressed and, let it be widely known, the symbol of progressive thought in art and culture. The very malformations of the ancient Metropolis are symptomatic of the vigour which quickens human activities.

London revels in an atmosphere which harmonises her features at all seasons. She can make and unmake the reputation of architects, scorn trivialities, reduce monstrosities to insignificance, and yet still remain majestic. It is significant also that the Queen of the Ocean does not take kindly to those works which are unsympathetic to her dignity. She favoured the wizardry of Sir Christopher Wren and she allowed Sir Charles Barry to arrange the Westminster fantasy. But the Royal Lady reserves to herself the right to protect her looks. There are dream cities just as there are castles in the air, visions of untold prosperity and the cultivation of illusions without which life would be dead. What artists we should be if we could enter into the thoughts of ordinary folk and combine Metropolitan improvements with beauty!

Public opinion rightly inclines to the theory that the business and administrative centre of the City should be allowed to expand. This should result in one of the greatest improvements of all time. The historical significance, no less than the dramatic character of London, would be enhanced. What is required is an ideal, not a series of brilliant ideas, however exciting the latter might be.

The spirit of architecture is implanted in human nature. It began with man and had its origin in the mysteries of existence which prompted men to build. It has accompanied the human race through the centuries. It caused dismay when the Tower of Babel was projected, it tranquillised the Monks of Cluny and it prompted the major expression of the Renaissance. At times, and in varying degrees, everybody is susceptible to the influence.

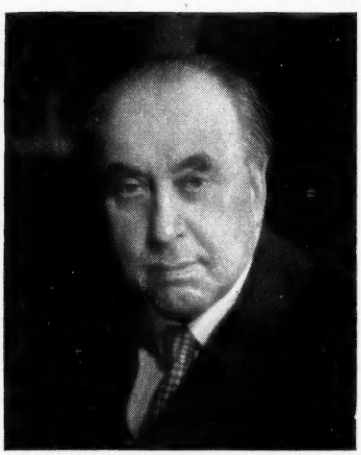
We have, therefore (as Professor Lethaby said), to return in order to advance, and I can think of no better slogan for 1955. A. E. RICHARDSON.

From the President of the Royal Institute of British Architects

THE building industry has at last regained the freedom to which it has looked forward during the past fifteen years of restrictions and shortages. I hope we shall use that freedom wisely, remembering that we are a public service with the duty of providing the nation's buildings. If we co-operate to increase productivity and reduce costs we will fulfil that duty; if we price ourselves out of the general market, so that building becomes a luxury commodity, we shall both fail in that duty and damage our industry.

At the same time I welcome the return of a balanced industry. For too long the emphasis on utility building has starved the industry of craftsmen, so that to-day it is hard to find the men who are capable of executing the high-quality building of twenty years ago. Craftsmanship can be encouraged only by a demand for its services.

We should be, and can be, an industry of wide range, embracing at the same time prefabricated construction with mass production of units permitting variety in economical design, and those



Professor A. E. Richardson, PRA, FRIBA.

highly specialised single buildings which call for the best individual craft skills. To-day there is an immense field of activity opening to architects, engineers, builders, operatives and manufacturers of materials. We shall prosper in that field only if we are prepared to co-operate wholeheartedly.

I therefore welcome the opportunity of sending this New Year message to *The Builder*, which has always spoken for the industry as a whole. C. H. ASLIN.

From the Chairman of the Quantity Surveyors' Committee, RICS

WITH the removal of the last of the licensing restrictions the building industry can now look forward to that freedom it has not enjoyed for fourteen years.

Surely the time has come when a building owner is entitled to know what his project will cost at the tender stage, and we hope to see in 1955 a great extension of fixed priced contracts. On the other hand, with such a large programme of building work ahead, the industry must take care not to bite off more than it can chew. Costs cannot be expected to fall while so many building owners are demanding a start before they are even quite sure what they want. It is only by a stern resistance to this that variations can be kept down—it cannot be emphasised too strongly that the job the chartered quantity surveyor likes best is the one that has no variations.

It is pleasing to note that our relations with architects and builders are perhaps better than ever, and it is hoped that in the New Year the misunderstandings which at the present time cloud our relations with some district auditors may be removed. This can easily be done if the auditors concerned will have the courtesy to discuss with the quantity surveyor involved the somewhat complex question of work omitted as a whole, instead of putting their own interpretation on a scale of fees in the preparation of which they took no part.

We are determined to maintain the high standards always required by the RICS, and to those quantity surveyors who were disappointed in the results of the 1954 examinations I would like to convey a special message: Our exams. are meant to be hard and the standard required will not be varied however many or few candidates present themselves. Remember, the harder the effort the greater the prize.

Finally, I wish all connected with our great industry a happy and prosperous New Year and thank you, Sir, for the opportunity of sending this message.

G. P. VALE.

From the President of the Institute of Builders

I SEND to all your readers, and in particular to those who are master builders, my best wishes for a happy and successful 1955. For the first time for many years we set out on our journey through a New Year free from all artificial controls. With no licences to worry about, we shall naturally be happier than we were, but we cannot be really contented until we feel that our contribution to the needs of the nation is being made at an economic cost. Production and management are two of the main factors in reducing costs, and both are very much the concern of the Institute of Builders, which takes great interest in technical and technological education. The contribution which our technical colleges and schools make towards both factors is really important, not only in respect of our craft apprentices but also with our young surveyors. I hope that the coming year will see young men coming into the industry in both categories—the latter in particular—in greatly increased numbers. There is undoubtedly a great need for them and the industry has much to offer to the right type of lad who, following a recognised course, qualifies first as a Licentiate and finally as an Associate of the Institute, which are the hall-marks of sound general education, technical knowledge and practical ability.

A great contribution to the success of 1955 would be a genuine revival of pride in craftsmanship which suffered such a set-back during the war years from which it has not fully recovered. If a job is worth doing at all it is worth doing well, and our work, which is for the most part creative, must surely be always worthwhile.

As an industry, we can feel justly proud that we have exceeded the target set us for the annual production of houses, and whilst we must not relax our efforts in this part of our work, let us grasp the opportunity, which is now ours, to erect the wider variety of buildings with the same efficiency.

So I end as I began, by wishing all interested in building—and that, Mr. Editor, includes you—every happiness and success in the New Year.

F. LESLIE WALLIS.

From the President, National Federation of Building Trades Employers

THE acknowledged success of the building industry in 1954 has been due, in the main, to two factors—first, the easing and then the abolition of controls, thus giving builders the chance to exercise their initiative and enterprise; and, second, the splendid efforts of the materials manufacturers.

In view of the even larger building programme envisaged by the Government in 1955, I am glad to know that the manufacturers will be intensifying their efforts in the coming months. This should enable the industry to do even better.

There is one aspect of the materials position which is giving concern. I refer to timber—the only major material that is imported. If the continuing drift towards the use of substitutes for timber is to be arrested, prices of this material must come down. It is impossible to build economically—and we must remember that this will continue to be the first objective of the industry—with timber prices at their current level.

In conclusion I would like, through the columns of *The Builder*, to wish all in our great industry a happy and prosperous New Year. G. W. GROSVENOR.

From the General Secretary, National Federation of Building Trades Operatives

THE New Year sees the building industry once again shorn of restrictions and controls, so perhaps we may look forward to an unhampered activity in which the industry may yield a further remunerative and productive effort. Full employment? Yes indeed, but can we see to it that our affairs are conducted in an orderly fashion and not in a manner that encourages a scramble for whatever temporary outsize gain may appear? A planned economy is a blow against the unhindered operation of the law of supply and demand, but we have to see to it that the planning itself is planned! In other words, one can have too much of a good thing, and so our object must surely be not to throw the baby out with the bathwater. On the one hand, the industry must avoid chaos or anarchy by planning against it; and, on the other, it must avoid being stifled in a welter of good intentions. Planning by all means, but good planning not bad.

Never has the industry been so affluent as now: the operatives will do their best to share this affluence in some small measure, and they have in fact made the first moves. So let me wish all concerned in our lucrative industry a happy New Year and continued prosperity: not the least part of this wish goes to *The Builder*, that fount of information invaluable to the building industry. R. COPPOCK.

From the President of the Federation of Associations of Specialists and Subcontractors

I AM very glad to have this opportunity of extending to your readers on behalf of my Federation, and from myself personally, best wishes for the New Year.

As I see it, 1955 will be a year of challenge. The abolition of licensing has removed the last of those restrictions of which the industry has complained so long and so bitterly; and has torn away any excuse based on those restrictions which it may have been from time to time tempting to advance to cover up inefficiency. We have now to face up to our claim that we could not give of our best because we were not allowed, and to justify ourselves by our efficiency in reducing costs and increasing productivity.

We shall not do that by behaving as if the 1930s had come again. There is plenty of work for all; and the industry should be aware that a condition of its restored freedom is that it recognises an overriding obligation to give the nation what is demanded of it. The country will not forgive it for failing to bake the biggest possible cake of the best possible quality because it is squabbling about who shall provide the ingredients, who shall stir the mixture, and who shall supervise the baking!

The New Year is the time to take stock of ourselves. We have recovered our pre-1939 freedom of action. If we resurrect the habits of mind of the day-before-yesterday, its prejudices and its sectionalism, I do not think we shall keep our freedom long. We all want to get back to lower building costs; but not at the price of jerry-building—against which I am confident that the industry has itself taken suitable precautions—and not at the cost of a ruthless pressing of economic advantage between the two sides of the industry or, indeed, between interests on the same side. We live in a changing world and always have so lived. Let us at the beginning of this New Year recognise that fact and welcome it in our determination that it shall benefit everyone and produce a better spirit of co-operation and service. To that end, if we must, let us be ruthless! P. C. FORD.

REBUILDING THE CITY

The Planning Framework

By Our Special Representative

THE whole tempo of rebuilding the devastated areas of the City of London has undergone a great change in the brief space of the past year, the credit for which must largely be given to the liberal licensing policy adopted by Sir David Eccles, when Minister of Works, for the abolition of licensing is too recent for its effects to be seen on the ground. Even as short a time ago as last summer, a casual visitor to the City would have discerned little alteration in the appearance of the blitzed sites, beyond a better growth of vegetation, from that presented at the end of the war. To-day all is changed; there is scarcely a large site where signs of building activity are not to be seen, while on all sides the silhouettes of huge cranes break the skyline. It is unfortunate, therefore, that some of the recent suggestions put forward by various interests for the comprehensive redevelopment of the City of London carry the implication that, unless drastic action is taken without delay, the City will be rebuilt piecemeal and all the advantages that would accrue from modern town planning practices will be lost for ever.

A MASTER PLAN

The truth is, of course, that every new structure going up in the City to-day (with the exception of a few minor in-filling projects) is being built within the framework of a master plan. Furthermore, the City Corporation is insisting upon the comprehensive redevelopment of every area that is sufficiently large for this to be practicable. To date 23 redevelopment units have been created in the City to which these principles must apply.

NEW BARBICAN SCHEME

It is understood that as far as the Corporation is concerned, the scheme put forward by the New Barbican Committee is in abeyance. That the scheme is dead, however, is not the view of the New Barbican Committee. They have now, it is reported, met to consider the action to be taken following the City Corporation's adverse verdict on their scheme for redeveloping 40 acres of the City in the Aldersgate-Barbican area, north of St. Paul's, and have decided to appeal to the Minister of Housing and Local Government in order first to clarify the procedural position, and, secondly, to secure the Minister's intervention in what the committee regard as the principle of comprehensive as opposed to "piecemeal" development, which it is alleged the Corporation contemplates.

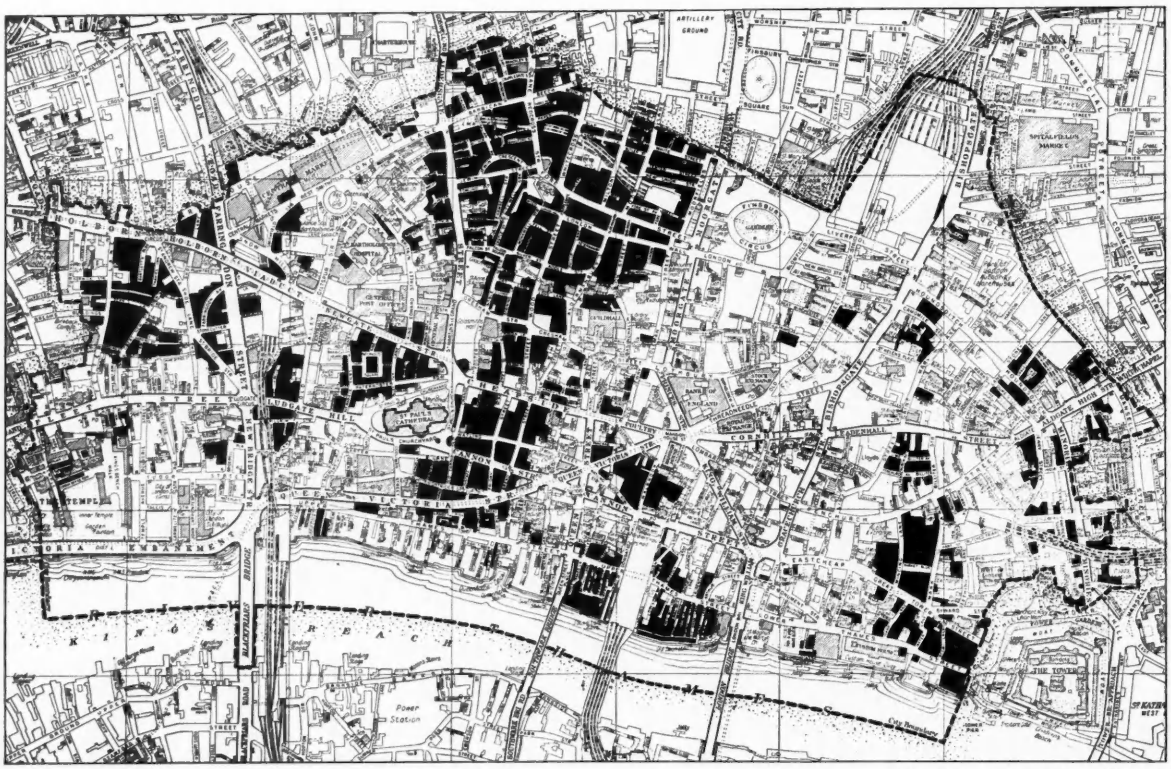
The cudgels have also been taken up again by Sir Gerald Barry, the committee's chairman, and others associated with the scheme, in a letter to *The Times* of January 6. Sir Gerald Barry says:

"We are not prepared to be brushed off as perpetrators of a 'Wellsian dream' . . . nor do we accept the idea that the 'big cranes should move in' to do something or anything so long as it is done. We were told by the chairman of the Improvements and Town Planning Committee that we came along much too late. This is not true; we have been urging the matter for a long time, but it is precisely because it is now so late and the moment so critical that we feel it our duty to continue to press vigorously.

"A pilot scheme has been produced for which no more is claimed than that it is a first stage diagram of an idea demonstrating the immediately practical feasibility of recreating a balanced community in the heart of the City. It provides car parking on a scale economically and physically impossible elsewhere in London, except the royal parks, and helps to reduce the transport problem by providing dwellings for 4,000 people. In addition it offers a new kind of space in vast areas, hitherto considered unobtainable in the heart of the City, a kind of space for which there is both an obvious need and a present demand. Can these issues be disregarded so easily?"

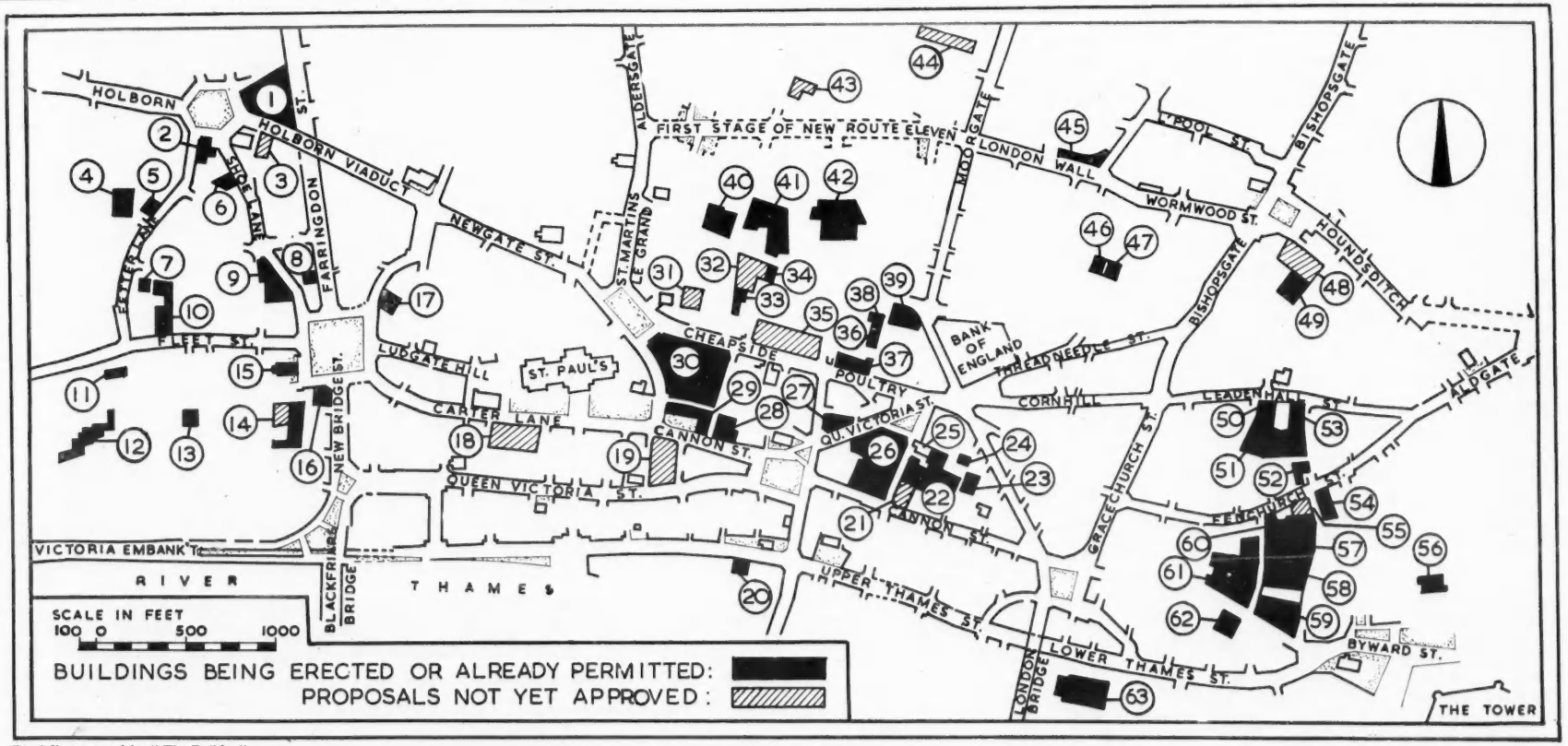
TWO SCHOOLS OF THOUGHT

Much of the controversy over the rebuilding of the City would appear to stem not from the absence of any clear-cut policy upon the part of the Corporation but rather from the conflicting views of two opposing schools of planners. The first believes that, to start with, all land in an area of comprehensive redevelopment should be publicly acquired, and apparently envisages a high degree of control, not only on the type of development —whether offices, shops, commercial, etc. —the height and the siting of buildings, but also over their individual treatment and appearance. The second school of



Based upon Ordnance Survey map with the sanction of the Controller HMSO. *Adapted from a map by Geographia, Ltd.*

THE CITY OF LONDON: War damage areas are shown blacked in.



Specially prepared for "The Builder."

REBUILDING THE CITY: Map showing present and proposed development.

1. Diamond Corporation. Architects: Sir Thomas Bennett and Son.
2. Brixton Development Corporation (General Offices). Lewis Solomon, Son and Joseph.
3. City Temple. Seely and Paget.
4. Law Stationery Society. Sir Thomas Bennett and Son.
5. Monotype Corporation. Leo O. L. Hannen and John H. Markham.
6. Morning Advertiser. Ellis, Clarke and Gallannaugh.
7. 15/16, Red Lion Court. Haynes and Carpenter.
8. Amalgamated Press. Ellis, Clarke and Gallannaugh.
9. Daily Express. Ellis, Clarke and Gallannaugh.
10. Hulton Press. Arthur Ash.
11. Serjeants Inn. Devereux and Davies.
12. The Temple. Sir Hubert Worthington and Sir Edward Maufe.
13. 19/22, Bouverie Street. W. Leslie Twigg.
14. St. Bridget's House and Extension for Unilevers. Trehearne and Norman, Preston and Partners.
15. St. Bride's Church. W. Godfrey Allen.
16. The House of Cope. Shingler and Risdon.
17. Electrical Sub-Station for BEA. Staff architects.
18. Faraday House Extension (GPO), Sir Charles Mole (MoW).
19. Financial Times. A. E. Richardson, PRA, and Houfe.
20. Bull Wharf. Alexander Gale.
21. Offices. Henry Tanner.
22. St. Swithin's House. Gunton and Gunton.
23. London Insurance Co. Whinney, Son and Austen Hall.
24. 1, St. Swithin's Lane (Offices). T. E. Heysham.
25. St. Stephen's, Walbrook. W. Godfrey Allen.
26. Bucklersbury House. Campbell Jones and Son.
27. Bank of London and South America. Victor Heal.
28. Watling House, for Salters Company. Easton and Robertson.
29. Gateway House, for Wiggins Teape, Ltd. Trehearne and Norman, Preston and Partners.
30. Bank of England. Victor Heal.
31. Saddlers Hall. L. Sylvester and Basil M. Sullivan.
32. 14/18, Gresham Street. Trehearne and Norman, Preston and Partners.
33. Offices, 4/8, Wood Street. Ronald Ward and Partners.
34. Morleys, 18/22, Milk Street. Stanley Peach and Partners.
35. Sun Life Assurance Co. W. Curtis Green, RA, Son and Lloyd.
36. 1 and 1a, Frederick Place, and 33/34, Old Jewry. Vigers and Co.
37. Mercers Hall. Gunton and Gunton.
38. 27-32, Old Jewry, Commercial Bank of Sydney. Waterhouse and Ripley.
39. Princes Chambers. Victor Heal.
40. Haberdashers Hall and Offices. Arthur Ash.
41. 59/69, Gresham Street, for Site Improvements, Ltd. Sir John Burnet, Tait and Partners.
42. Guildhall. Sir Giles Scott, OM.
43. 12/17, Fore Street, 5/7, Cripplegate Buildings, for London Parochial Charities. Campbell Jones and Son.
44. 1/19, New Union Street, and Tenter Street. W. Curtis Green, RA, Son and Lloyd.
45. 1/3, London Wall Buildings (reinstatement). Clifford Strange.
46. Dutch Church, Austin Friars. Ansell and Bailey.
47. Dutch Church Offices. Ansell and Bailey.
48. 55/63, St. Mary Axe, and 12/20, Camomile Street. Ashley and Winton Newman.
49. Lumley House. Alan W. Pipe and Joseph Vermont.
50. Prudential Assurance Co. Staff architects.
51. Lloyd's. T. E. Heysham.
52. City of London Real Property Co., Ltd. Howard, Souster and Fairbairn.
53. Blue Star Line. Alan W. Pipe and Sons.
54. Marine Engineers. Ronald Ward and Partners.
55. Norwich Union Assurance Co. Lewis Solomon, Son and Joseph.
56. Trinity House. A. E. Richardson, PRA, and Houfe.
57. Dunster House, for City of London Real Property Co. Howard, Souster and Fairbairn.
58. Colonial House, for CLRP Co. Howard, Souster and Fairbairn.
59. Kings Beam House for Customs and Excise, for CLRP Co. Howard, Souster and Fairbairn.
60. Clothworkers Hall and Offices. Whinney, Son and Austen Hall.
61. Plantation House and Milocrat House. Albert W. Moore and Son.
62. 5/10, Great Tower Street. Gunton and Gunton.
63. New Fresh Wharf. Sydney W. Gell.

thought, which is that favoured by the Corporation, is more elastic and, having laid down the principles to be observed—height, user, siting, plot ratio, etc.—is then content to leave a much wider measure of freedom to the private developer. Indeed, it is not part of the Corporation's function to dictate to a developer which architect he should commission to design his building. This policy, it is conceded, may lead to variety in the architectural character of the City, but it is believed that it will result in giving interest in contrast to stereotyped repetition.

Here it should be explained that the City Corporation has compulsorily acquired large areas for redevelopment to secure comprehensive planning, but at the same time the Corporation allows a freeholder who is able and willing to develop his site comprehensively, and at no greater cost to the Corporation than if the Corporation acquired the freehold of the site, to do so. The cost clause means, in effect, that the freeholder must be willing to part with, for a nominal sum, as much of his site as the City authorities may require for road schemes or public open spaces. The loss in site coverage suffered by the developer can easily be made good in terms of floor space by the higher building that is expected to be a feature of the rebuilt areas of the City.

ROAD SCHEMES

Long-term plans for improving the flow of traffic in the City prepared by the Corporation's consultants (Sir William Holford and Dr. C. H. Holden) have undergone considerable changes as a result of the policies of the Ministry of Transport. One of the effects of these changes has been greatly to increase the importance of the proposed new Route Eleven, and it is hoped that construction of the portion between Aldersgate-street and Moorgate will shortly begin. The City's master plan also envisages the construction, diversion, widening, improvement and also the closing of numerous roads and portions of roads throughout the City. Already new buildings are being erected at what appear as crazy angles to existing streets, in anticipation of the line the street will eventually follow. But though many small roads and alleyways will be closed, the Corporation's policy of encouraging more open-planned building and, in general, restricting floor space to the region of that of the former buildings, will result in the creation of more open space, and many new courts, gardens and footways. Car parks to serve the new buildings will also be provided.

The Corporation's policy is flexible in regard to the height of buildings within the daylighting codes, subject to satisfactory fire precautions and siting, and provided that the plot ratio laid down is not exceeded. This means, in practice, that the few very tall buildings—and heights of up to twenty-five storeys in isolated cases are not impossible — are likely to be in the form of towers or point blocks.

The ending of building licensing has already very considerably increased the numbers of applications for planning permissions to build in the City, and it is expected that the speed at which rebuilding will now proceed will depend only on the supply of labour, materials and money available for the purpose, but no doubt the resources of the building industry and the ingenuity of the architectural profession will combine to overcome these difficulties, and the City of London will once more be fitted to accommodate the financial houses and industrial headquarters of the Empire.

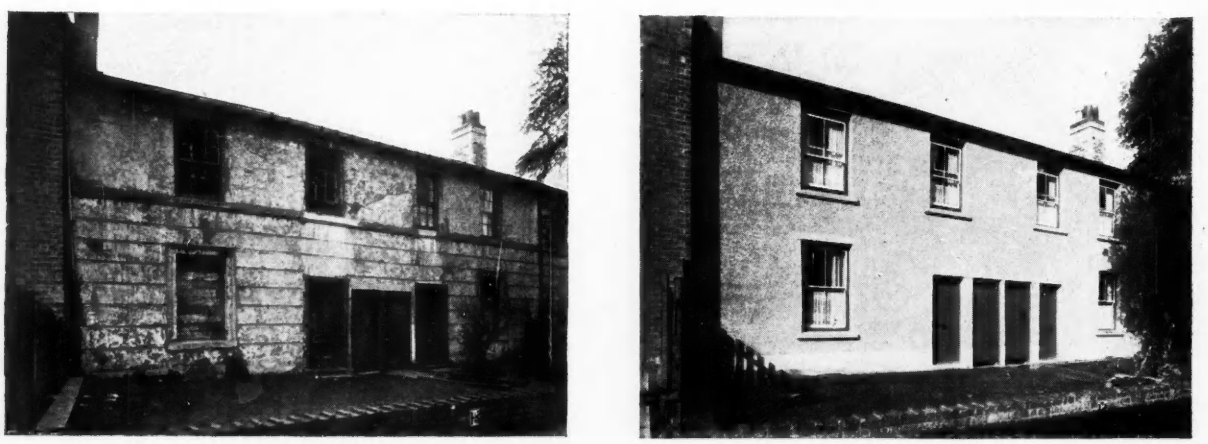
Reconditioning of Sub-Standard Houses in Birmingham

By J. P. MACEY, FRICS, FIHsg., Housing Manager, and A. G. SHEPPARD FIDLER, MA, BArch., FRIBA, AMTPI, City Architect, Birmingham

THE pioneering work recently carried out by the City of Birmingham in the field of reconditioning slum houses helped to focus attention on this urgent social problem. The practical experience gained by the City was of great value to the Government in framing the Housing Repairs and Rents Act, 1954, and the City undoubtedly gave a lead to the country in "Operation Rescue."

The problem of the slums is nothing new in the history of great cities, and it is interesting to find from old records that Birmingham carried out a somewhat similar scheme on a smaller scale under the provisions of the Artizans Dwelling Act of 1875. This scheme resulted in the major street improvement in Corporation Street, but a secondary and important result was the reconditioning of about 1,000 houses which were repaired and put into good sanitary condition and provided with a Corporation water supply. Elsewhere, provision was made for the erection of new houses under this scheme, which must have been one of the very earliest of its kind in the country.

The reconditioning of sub-standard houses has been proceeding steadily in Birmingham for several years now, and it is natural for other authorities to inquire how it was possible for Birmingham to carry out this work having regard to the fact that the power to do so under the Housing Acts was still under discussion by local authorities and the Central Government. The answer to this is that Birmingham took a very progressive view of the powers given to local authorities under the Town and Country Planning Act, 1944, and decided to recondition those houses which formed part of certain blighted areas which were to be the subject of redevelopment schemes involving drastic replanning. It was obvious that one of the principal difficulties



An example of the reconditioning of old terrace housing in Birmingham.

Another example of the transformation wrought by reconditioning.

in making a start with redevelopment would be the slow rate at which new housing could be provided, bearing in mind that the areas concerned were nearly 1,000 acres in extent and contained some 30,000 sub-standard houses. The City Council realised that the process of rehousing and redevelopment would probably take some 20 years, and it properly felt that it could not possibly condemn families to continue living in such conditions for such a long period. The City, therefore, decided to embark upon an extensive programme of reconditioning in order to make these houses tolerably habitable until such time as they could be pulled down to make way for new homes.

SCOPE OF OPERATIONS

The Act of 1944 made no direct provision for any work of this kind nor were any Government grants available, but the City Council decided that the expenditure was fully justified and, indeed, essential in the interests of the families who must perforce remain living in these houses for many years to come.

Before describing the reconditioning work in detail, it is perhaps worth while to look at a general picture of the scope of operations in the City. The areas contained at the outset nearly 30,000 dwelling-houses, most of which were of the slum type and over 18,000 were back-to-back houses. Nearly 20,000 houses had no separate sanitary conveniences and nearly 4,000 had no internal water supply. The age of the property generally is between 100 and 110 years and the standard of construction is extremely poor. Factories and commercial properties are closely intermingled with the houses, aggravating the problems of repair and especially the subsequent operation of site clearance. The areas are characterised by very high building density.

The properties were acquired under a Compulsory Purchase Order and acquisition was dealt with by the expedited completion procedure. Under this method, at one period the rate of vesting reached a figure of 10,000 per year. The process of acquisition under the new Act will, of course, be very much slower than this method allows.

A programme has been prepared providing for the demolition of these 30,000 houses in successive yearly stages over a period of 20 years. Properties due for demolition within the first five years are known as " short life " properties and, apart from providing water supplies to some of them, repairs are limited to keeping them up to minimum Public Health Act standards.

In the first instance complete reconditioning is being carried out only to those houses with a life of 10 or more years, but extensive repairs and some renovation work are carried out where necessary to those houses which have a life of 5 to 10 years.

The term " reconditioning " covers all such work as may be necessary to bring the whole house up to a standard of tolerable habitability. The most common tasks are as follow:

Roofs. These frequently need stripping and completely re-covering, and they probably receive more attention than any other single feature, because they play such an important part in arresting the decay of the rest of the structure. Wherever possible good slates are salvaged for reuse, but the general practice is to use asbestos-cement slates in view of the short life of these properties. Their lightness is an additional advantage.

Walls. Extensive areas are found to be badly bulged or defective. They have to be temporarily shored and rebuilt, with proper attention to bonding into cross-walls, etc. Repointing is another item which is necessary for most blocks. Gable walls are often only 4½ in. thick and have to be rendered.

Gutters and downpipes. Another means of warding off dampness, the principal source of decay, is to ensure that all gutters and downpipes are in good working order. Extensive renewals are necessary and care must be taken that the work is properly executed, with gutters laid to correct falls, downpipes fixed away from wall surfaces and carefully painted, and so on.

Chimney stacks. These are often in a bad and even dangerous state, and the only sound solution is to take down and rebuild them. Flashings need attention and for these zinc is commonly used having regard to the short life of the property.

External decorations. All painted surfaces are burnt off as necessary and repainted, using contrasting colours.

W.c.'s and wash-houses. Most of the houses have shared external w.c.'s and wash-houses and these are generally in such poor condition that they have to be rebuilt. To provide some additional w.c. accommodation as a measure of improvement the following standards are used: (*a*) A separate and efficient outside water-closet of the wash-down pedestal type is provided for each house with a separate curtilage; (*b*) for each house not at present having a separate water-closet and not having a separate curtilage, additional w.c.'s are provided on the basis that there shall be water-closet accommodation to the standard that no water-closet is allowed to serve more than two houses.

WATER SUPPLIES

Water supplies. At the outset of the operation there were 4,000 houses which had no internal water supply, but installation has now been completed in every case.

Electric lighting. A considerable proportion of the houses had only gas lighting, which is replaced by electric lighting as part of the reconditioning.

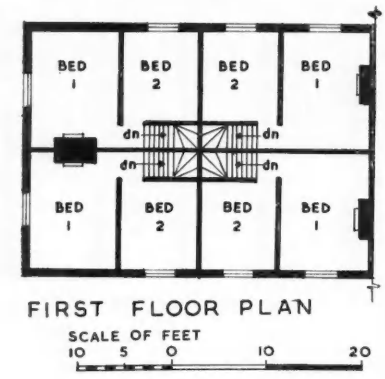
Firegrates. Worn-out or obsolescent ranges are replaced with modern grates and tiled surrounds. At the option of the tenant an " all-night " fire may be installed.

Plastering. Internally extensive areas of plaster have to be renewed. Plaster-board is used for ceilings, the joints being scrimmed and the ceiling given a skim coat.

Internal decorations. Walls and ceilings are normally distempered, but if the tenants so desire they may purchase wallpaper which the department will hang without charge. Internal woodwork is painted throughout.

Floors. Wood floors are often damp and show signs of wet rot or dry rot. Existing quarries are often uneven, broken, or loose. The usual practice is to lay a concrete floor finished with pitchmastic.

Damp-proof courses. Generally new damp-proof courses are provided by using bitumen hessian based d.p.c. bedded in cement mortar, but experiments are being carried out with other methods such as the use of electro-osmosis, and silicone injection.



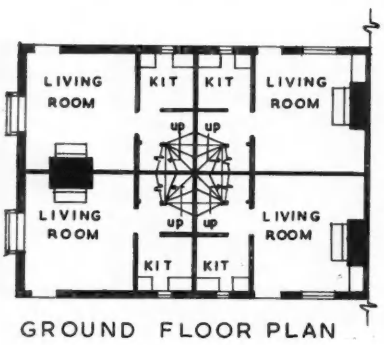


FIG. 1

Up to October 31 last, 8,680 houses had been completely reconditioned at an approximate cost of £1,606,000. Partial reconditioning has been carried out to a number of other properties as an interim measure until such time as the complete processcan be applied. £1,423,600 has been expended on work of this character.

The present average cost of complete reconditioning is £200 per house.

Some examples of the work are shown in the photographs on pp. 46 and 47.

It will be noticed that the work does not involve conversion of these properties. Generally speaking, this is not a practical proposition because of the high cost in relation to the comparatively short life of the property. The average life of the houses which are being reconditioned is about 15 years, and it is quite clear that even the present work of reconditioning will involve a considerable financial loss. Fortunately, the new Act provides for Government assistance towards this expenditure.

The schemes carried out at Stockton and Croydon were based on properties having a further life of at least 20 years.

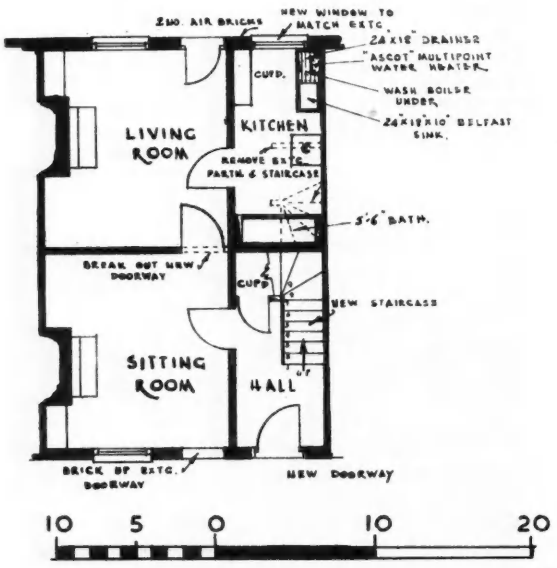
Apart from the question of their short life, most of the houses being dealt with in Birmingham are of a very low standard of construction and, for this reason, it would be very difficult to make any considerable alteration in the existing walls without endangering the stability of the whole structure.

Nevertheless, the City has embarked on a pilot scheme for the conversion of eight back-to-back houses into four "through" houses, each completely self-contained. This is an expensive process which will cost approximately £570 per house, but it is being undertaken because it will provide some larger houses which are desperately needed for rehousing purposes.

The vast majority of the houses in these areas contain only two bedrooms and nearly all the families living there need at least one more bedroom. Because of this great difficulty is experienced in carrying out rehousing in connection with the clearance programme. There is a shortage of larger type dwellings which are acceptable to the tenants being rehoused and many of them prefer an older type of house to being removed to a much more expensive post-war house in another part of the City.

The conversion scheme in question is being closely watched and will form the basis for other similar schemes. It will, however, be appreciated that even this conversion work creates housing difficulties because it is necessary to remove eight families in order to reaccommodate four, and there is thus a numerical loss to be offset against the very considerable improvement in conditions which is gained by such a conversion scheme.

Plans of this conversion scheme are shown indicating, in Fig. 1, the before and, in Fig. 2, the after state of these houses. Looking at the existing plans it will be seen that the staircase does not run directly from the living-room as is the case with



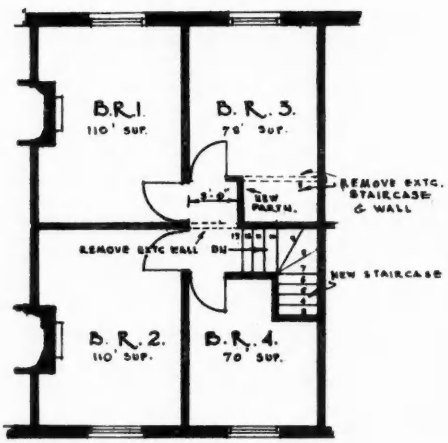


FIG. 2

Two-bedroom houses are shown above, in Fig. 1 before and in Fig. 2 (below) after conversion into half the number of four-bedroom houses.

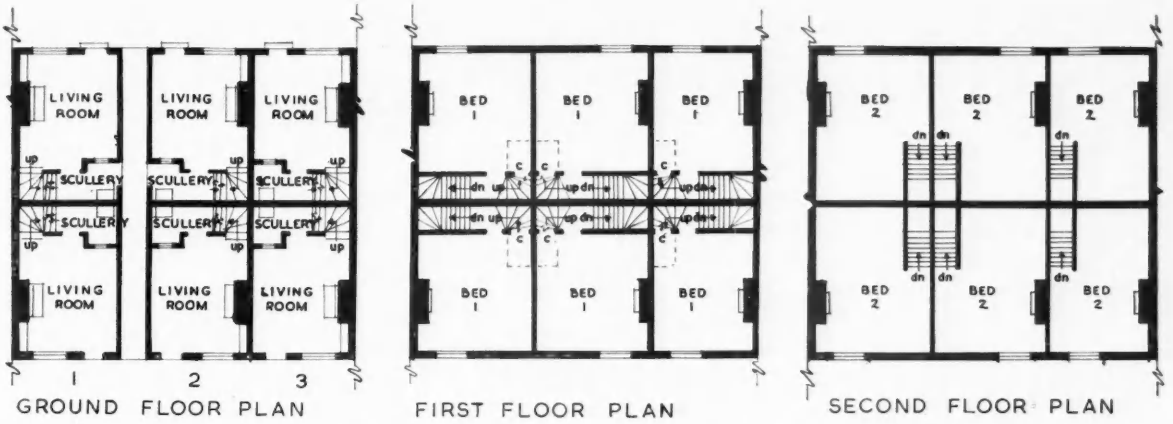


Fig. 3.—An example of the poorer type of housing so common in the central streets of Birmingham. The typical terrace house with basement so common in London is not found in Birmingham and other Midland cities.

so many of our sub-standard houses; indeed, even in their present state, these houses are slightly above the general standard.

An indication of the poorer type of house which is so common in the central streets of Birmingham is given in Fig. 3. It should be mentioned that the typical terrace house with basement so common in London (the subject of the Ministry of Housing and Local Government's recent exhibition at Hollies Street) does not exist in Birmingham and other Midland cities.

Of the original 30,000 houses some 24,000 still remain. The management of these houses and their repair and reconditioning is the responsibility of the Housing Manager. The work is carried out by small building contractors and some 84 firms are at present employed with an estimated total labour force of about 850 men. The Housing Management Department has prepared its own standard specifications, a copy of which is supplied to every builder, and all tenders are deemed to be based on the standards laid down therein. The specification is coded, and this saves the inspectors' time on the site, typing time in the office, and is of great assistance to the builders once they become familiar with its operation.

When reconditioning work is to be carried out on any particular block, the Department's inspector makes a careful survey of the whole house and decides what work is to be done. He then prepares a specification which can be abbreviated by quoting references to items in the standard specification. Tenders are invited on this basis.

For minor day-to-day repairs, a priced schedule of works has been issued to all the builders concerned and this not only saves a great deal of time but avoids any misunderstandings as to the standard of work required.

For example, when it is necessary to take down and rebuild a chimney stack of, say, 22 courses, all that the inspector need quote is the following:

Code	Abbreviated working detail	Unit	Rate s. d.
	Chimney Stacks		
	Two-storey and above		
B/60	Take down 21 courses of four flue square stack and rebuild.		
	Add for each additional course.		
	Add for each 5 ft. 0 in. lift.		

From this brief description and the Code No., the contractor knows that he is required to work to the following detail quoted in the standard specification:

"Code No. B/60 FULL DETAIL:

"Take down ..... courses of ..... flue chimney stack, rebuild in new materials and point, form two courses oversailing 1½ in. projection commencing four courses below chimney head.

"NOTES.—The unit rates for chimney stacks are calculated on seven courses of brickwork.

"The rates for normal 'take down and rebuild' items include for the erection and subsequent dismantling of a mid-roof type of scaffold permitting work on the stack to a height of 5 ft. 0 in. above its highest intersection with the roof.

"Where scaffolding has to be provided from ground level up to the working platform and/or the working platform has to be lifted to a level higher than the level allowed for, the additional scaffolding will be calculated at the fixed rate for 5 ft. 0 in. lifts and added to the main item.

"The inspector shall indicate:

"(1) Number of courses.

"(2) Position of rebuild."

It is also part of the contract that he shall work to certain general clauses included under the "Bricklayer" section of the standard specification which governs the type of mortar and bricks to be used, bonding to existing work, and so on. These general requirements are too extensive to quote here, but the following extract may be of interest:

"CHIMNEY STACKS AND FLUES

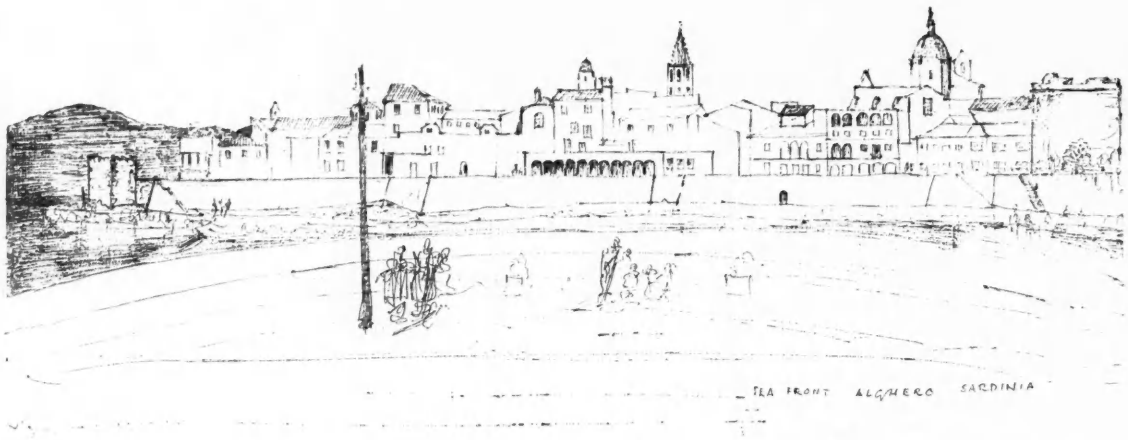
"All chimney stacks to be built in selected common bricks and pointed with weather-struck joints as the work proceeds. Build and point stacks and parge and core all flues in cement-lime-sand mortar.

"In all cases where blue bricks have been used in the heads of chimney stacks ordered to be rebuilt, a sufficient number of these shall be salvaged and used to form a two course D.P.C. at the head of the rebuilt stack."

It will be seen from this that the use of the standard specification saves a great deal of work for all concerned.

Apart from the 30,000 houses covered by the redevelopment schemes referred to above, there are a further 25,000 sub-standard houses in the city, and the City Council will shortly be recommended to deal with these under the new Act and to proceed with their acquisition and reconditioning as quickly as possible. Because of the rehousing difficulties, it seems fairly clear that these houses will have to be kept in use for an even longer period than the first group. In view of this, consideration is being given to the adoption of a higher standard of reconditioning work for the second 25,000 houses, and some of them may prove more suitable for conversion than those in the areas being dealt with at present.

The new Act very rightly states that where an authority can clear its existing slums within five years it must do so and must not embark upon reconditioning work at all. Where, however, housing difficulties make it impossible to clear all existing slums within the next five years the local authority is required to prepare schemes for reconditioning. The work is not glamorous, neither is it financially attractive, but there is no doubt that ameliorating measures of this kind ought to be carried out wherever families are compelled, through no fault of their own, to continue to live for some years in houses which are basically unfit for habitation.



SARDINIA

By ARTHUR KENYON, CBE

IT is tempting to compare one country or one island with another, but, no matter how nearly adjacent they may be, there is always that difference of climate, coast line and people which makes the country what it is, apart from its history. Indeed, it is surprising how little history affects present-day living. True, history has its influence, but not so markedly today as the guide book has it: customs and dress, like architecture, are becoming international.

Sardinia, cut off from Corsica by so narrow a strip of water as to be almost part of the same island, is Italian, while Corsica is French. Geologically, the two are very similar. Sardinia—a larger island, 250 miles long from north to south and about 50 miles in width—is mountainous with a rocky coast. The hills are conical and almost isolated, rising quite high and surrounded by plains, so that seen from a height they do not appear to be in ranges but rather separate hills. On the south sides they are often cultivated, but never extensively. They are mostly covered with scrub consisting of miniature palms, a foot or so high. The plains are cultivated, but again not intensively, and the farmsteads seem to be many miles apart. Oats and barley are grown as main crops with corn cob and tomatoes but few vegetables. There is a large cherry crop; there are some yellow plums, peaches and olives. The walls are stone, and oleanders grow alongside the road; the hedges are often formed of giant cacti.

The cultivated gardens in the towns, in spite of the dry soil, are rich with beautiful plants which are tended with great care. Hollyhocks, 12 ft. high, grow in clusters; there are geraniums in large bushes of dark and light reds and pinks, flame-coloured lilies, oleanders and gladioli.

THE SIMPLE LIFE

Life in Sardinia is simple. Much of the labour is done by hand. Horses, donkeys and oxen are still used for carrying loads. In the fields, much handwork is used, but there are agricultural colleges which appear to be engaged in reclaiming much of the land, and here a certain amount of machinery is being used. Stony ground makes reclamation very arduous work.

The weather is tropical in the summer months, with blue sky, few clouds and little rain. The coast towns are tempered by a breeze, but the inland towns are sun-baked. Rain falls for about 30 to 40 days in the year, and it is said that the winter months can have very inclement weather, as the line of hills is from north to south and gives little protection from the north winds.

A GOOD CENTRE

Alghero, a small town on the north-west coast, is perhaps the best centre for seeing Sardinia. The town is medieval, with stone ramparts and large circular towers of immense proportions: dominated by the cathedral tower, it groups pleasantly round the harbour. The old town has its narrow streets with high buildings, and the motor scooter has become a pest, racing up and down these narrow alleys which are more suitable to the donkey and pack mule of the past. There is a fine harbour where good-sized sailing ships put in, and from which fishing, making and mending nets, repairing boats and the like are carried on. The coral ships are to be seen arriving daily in the early evening. They go out in the early morning and periodically take the coral to Naples for polishing and making up into jewellery. There is a small industry of coral-cutting in Alghero and one shop in Via Roma which displays this ware made up into very attractive ornaments. The seashore is mostly rocky, but a short way out from the town, where there is a sheltered bay and sandy beach. a lido has been built with bathing huts and restaurant, which is extremely attractive.

Alghero is becoming a holiday town: two hotels have already been partially finished, and a larger one is nearing completion. There is also a private residence. very well situated on the coast, which is being renovated and improved to provide yet another hotel. These hotels are not luxurious. They are the small family *Albergos* with an efficient dining-room and a café-restaurant. Baths do not exist at present, but a lavatory basin is provided in each bedroom, with hot and cold taps: the cold tap works! The floors. as in most hot countries, are tiled throughout, without carpets, and are kept washed and clean and fresh.

There are many outdoor cafés under

shady trees, and in the evening promenading takes place around them, so that after dinner the town is gay with native people. The food is simple without excess. Macaroni is still a usual dish and the soup is excellent. Fish is uninteresting, but there is the occasional lobster! Meat is mostly veal, although few cattle are to be seen in the countryside. The coffee is good, but never served with a meal except for breakfast. Red or white wines, sweet but not unpleasant in flavour, are offered with meals.

There is an excellent food market which is open all day. An amazing feature is its cleanliness: in the evening, when the market closes, it is swept and cleaned down ready for the morning.

The handling of food and milk is perhaps not so careful as with us, but it is evident that great precautions are being taken in the way of hygiene, as the buildings are regularly disinfected with DDT, and the date when this is done is marked on the building so that you see the letters "DDT 15.9.53," and at first wonder what it is all about. Malaria, at one time prevalent, appears now to have been stamped out.

It is a joy to find a complete absence of litter in any part of the town, including the harbour. There are no litter baskets, so one must assume there is a good sense of civic pride and that people carry their bits and pieces away with them. It is to be hoped that English visitors will respect this pride and do likewise. The shops in Alghero, as in the other smaller towns, are small but extremely well stocked. The clothing shops are well supplied with ready-made clothes for men, but for women it is mostly dress material rather than made-up garments. Prices of goods are very similar to our own, but there are attractive things to buy of a kind uncommon in this country.

Building is primitive in that it is mostly hand labour, and scaffolding would appear to be in short supply. The construction seems to be slight by our standards and one wonders if their codes are right or whether they are taking undue risks. The workmen return from their work clean and tidy: when they have been employed on dirty work such as tarring they will be seen to change into clean white shirt, trousers and shoes. Have we not something to learn from this? There appear to be no fireplaces as there are no domestic chimneys to be seen anywhere. There does not appear to be central heating, either, and it is difficult to say what happens if it is cold.

Life, which is natural and simple, starts early in the morning and appears to go on till late in the evening. This applies to building labour also. There is, however, obviously a resting period during the heat in the middle of the day. The children, generally, are strong and healthy-looking, appear to start work at an early age and all seem to be busy. If not working, they are fishing or swimming or playing in the boats, which no one seems to mind, and because of this activity there appears to be little hooliganism. When it does occur it is generally dealt with by someone on the spot in a practical manner, which seems to work satisfactorily.

Men congregate together at all hours of the day, and it is seldom you see women at the cafés. The shady seats are generally filled with old, and not so old men, and there is seldom a vacant space to be found out of the sun.

It would be unfair to leave Alghero without mention of the very famous grotto of Neptune. The two-hour trip is taken in an open boat holding about

40 persons. It is necessary to have a calm sea, as it is difficult to land on the rocky coast. The grotto is very extensive and has to be traversed by waterways in tiny flat-bottomed boats until one lands on the floor of a magnificent vaulted apartment, with great rugged galleries and stalactites. Tremendous preparation goes on before a visit to this grotto, as it is lit by hundreds of candles placed in position by fishermen who precede the boat. This preparation takes several hours, and one feels that the natives are very proud of this natural possession which is considered to be one of the most noted in the world. On the return journey, all work accomplished and the small boats safely on board, you may have entertainment provided by the crew singing national Italian songs in very pleasant harmony.

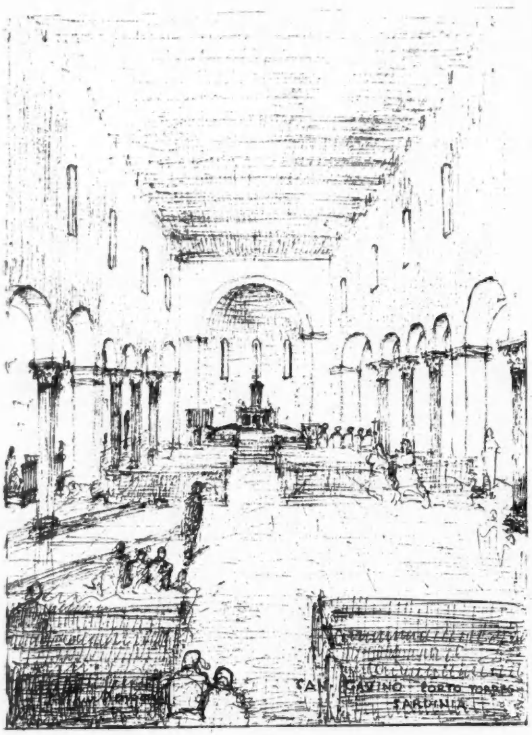
The capital of Sardinia, Cagliari, on the south coast, is a town with architecture of a very mixed and varied nature, but of little interest. The old part of the town is built at the top of a very steep hill approached by mighty flights of steps. The ascent is tortuous in the extreme, and when the summit is reached the view which one would expect to find magnificent is disappointing owing to the mass of uninteresting buildings below. Apart from the cathedral, which has been much restored, there is an interesting church of S. Saturnino with fluted Doric columns in the chancel and Corinthian orders with plain marble columns in the body of the church. There are also many Roman remains, including a Roman amphitheatre. There is a very extensive lido about two miles outside the town which caters for holidaymakers and seems to be a great attraction to the residents.

FLOURISHING TOWNS

The larger towns are surprisingly flourishing, and the shops are modern with very few native wares. For instance, Sassari, on the north coast, about 15 miles from Alghero, and the next largest town to the capital, has a very handsome square—handsome because its architecture is classic in form, of light-coloured stone and plaster, with a good skyline and well laid-out pavements. It has a statue of Emmanuele II, very ornate but in keeping with the rest of the square. There are modern buildings in the centre of the town, consisting of flats and shops, six to ten storeys high. There are lifts in the higher blocks, but, as so often seems to happen where such things are an innovation, they are not always working: this does not, however, appear to cause any consternation! There is a fairly extensive new part of the town consisting of houses and flats, all of a type which could be accepted anywhere; they are finished in plaster, even when the walling is stone, which it often is. High praise must be given to the magnificent plaster work, both externally and internally. It appears to be done in a primitive manner with the wooden float and is colour-washed, but the results are excellent. Sassari also boasts a cathedral of classic design.

On the north coast is the small town of Castle Sarda, with its buildings grouped around a hill dominated by the castle. This is a centre of granite quarrying and of basket-making, and it is extremely attractive.

The north coast of the island has very fine natural harbours, but a town such



as Porto Torres, where quite large ships call, is poor and not well kept, which is an exception. It has, however, one fine feature well worth a visit in its Basilica, which is very beautiful and dates from the 12th century. Its interior has exquisite marble columns with Greek Corinthian caps and the occasional Ionic and Composite cap. The proportions are extremely good and very well preserved. The exterior is simple with the usual cresting below the cornice. When, outside this Basilica, you see people flailing corn by hand in the hot tropical sun, you feel transported into ancient history.

There are a great number of smaller interesting towns throughout Sardinia which are well worth visiting, but time and transport are necessary. The roads are all second class, although well engineered in the mountain passes. A visit by car might prove fascinating.

A feature of Sardinia are the prehistoric remains of the Nuraghi, which are buildings reputed to be 5,000 years old. They are built of enormous stones, and the building is in the shape of a cone with a flat top. There appear to be two cones, one inside the other, and in the centre one a staircase is formed leading to one great central room, vaulted and unlit. No one appears to have discovered why they were built and what use was made of them. The largest and best preserved is at Terralba. There are many smaller ones to be seen when travelling through the country, and there may well be 3,000 to 4,000 remains of them. Sardinia might well be called the land of the Nuraghi.

The people of Sardinia have great charm. One feels no stranger, although the English tourists have hardly yet penetrated into its midst, and when on arrival at the airport of Alghero some charming inhabitant presents each lady with an armful of the most lovely gladioli made into magnificent bouquets, there is a feeling of hospitable welcome which augurs well for a friendly and happy stay. And so it is; wherever you go you meet cheerfulness and helpfulness.

Perhaps it is because it is a small island —living its own free and independent life, untrammelled by the artificialities of capital cities, and still wearing gay and colourful costumes—that life in Sardinia is so natural and peaceful. It has nothing spectacular to offer to the traveller and may never become a popular holiday centre, but for those who are prepared to accept a rugged country, with simple and primitive surroundings and occasional prehistoric remains reminding them of past culture, with a hot sun, blue sky and the blue Mediterranean, it will always be a place of happy retreat.

WIT AND WISDOM OF 1954

A SEARCH for the wit and wisdom of the past year, as recorded in our columns, leaves the impression that architecture was well served by men who could illuminate the great issues of the day with humour and bring understanding to their complexities.

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Architectural criticism was to be much to the fore in the year, and on January 1 the following verse on the BBC "Critics" appropriately appeared:

O Critics! in our hours of ease,
Polemical and hard to please,
You seem omniscient, set apart—
The pundits of creative art!
But, for the welfare of your souls,
May I suggest a change of rôles?
Create, I beg, a work or two
And let us have a shot at you!

—SPERO.

* * *

Later in the month, SIR DAVID ECCLES, then Minister of Works, sounded a timely warning on the rebuilding of the City of London: "*I wish to be blunt about the disaster which threatens. I fear that unless swift and effective action is taken we shall see fat and familiar, mediocre and characterless neo-Georgian architecture rising from Hitler's ruins to betray the confident spirit of the new age.*"

* * *

In February, LORD JUSTICE DENNING told the Town Planning Institute: "*The procedure of public inquiries [into planning disputes] often does not correspond with the principles of a fair trial as we understand them. . . . The truth is that a planning dispute should be just as much the subject of a fair trial as a dispute in a court of law.*" We ourselves have not yet recovered from the strictures of MR. JOHN SMITH, ARIBA, during a discussion at the AA on architectural journalism: "*Weekly journals, like 'The Builder,' are fundamentally newspapers, and it is not their fault if they have little news and that seldom good.*"

* * *

MR. HOWARD ROBERTSON, in his term of office as PRIBA, managed to get some words of wisdom into every speech he made. In April he told the LMBA: "*It is no use saying that a good design will be acceptable to all, for so much depends on what kind of good design. Architectural creation is a modish affair. The meat of one epoch or set of people is poison to the next; but if you live long enough you may see your own particular style of work coming round again, like a flared skirt or puffed sleeves in the fashion world.*"

* * *

And so on to the British Architects' Conference at Torquay in May, when MESSRS. W. A. ALLEN and EDWARD D. MILLS delivered their notable address on "Materials and Techniques." On the matter of designing to allow for natural forces they said: "*All history tells us this is the way to work . . . the forces of nature will win in the end, and we are better off letting them have their way or side-stepping them, rather than trying to defy them.*"

* * *

With the approach of the silly season, both wit and wisdom naturally declined. London's traffic problem became a source of increasing concern, and in November, MR. C. D. BUCHANAN, in an address at the Public Works and Municipal Services Congress, said: "*I can bear the thought of London changing gradually over the years . . . but I find it quite abhorrent to think of its being sacrificed wholesale to the cult of the motor car.*"

* * *

December saw the appointment of PROFESSOR A. E. RICHARDSON as PRA, and we awaited some verbal fireworks. At his first public speech after his election the Professor saw to it that we were not disappointed. He said: "*We want embellishment [on buildings], and we are going to have it. . . . It is our duty as architects to see that the buildings shall be ornamented. A building without sculpture is unthinkable. . . . There should be fountains in the streets with Tritons throwing water at one another.*"

NOTES AND CORRESPONDENCE

"Notes of the Week" will be found on page 83, and "Correspondence," with the "Acanthus" cartoon, on page 84.

East front facing Temple-gardens. Below : first-floor plan.

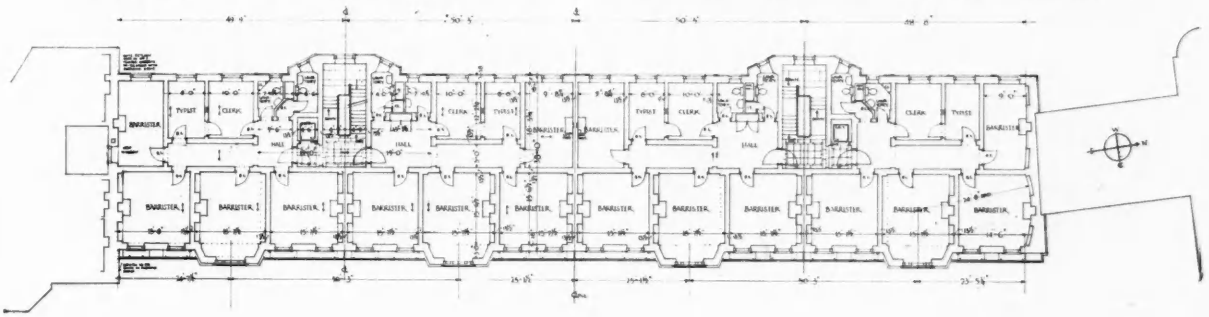
HARCOURT BUILDINGS, INNER TEMPLE

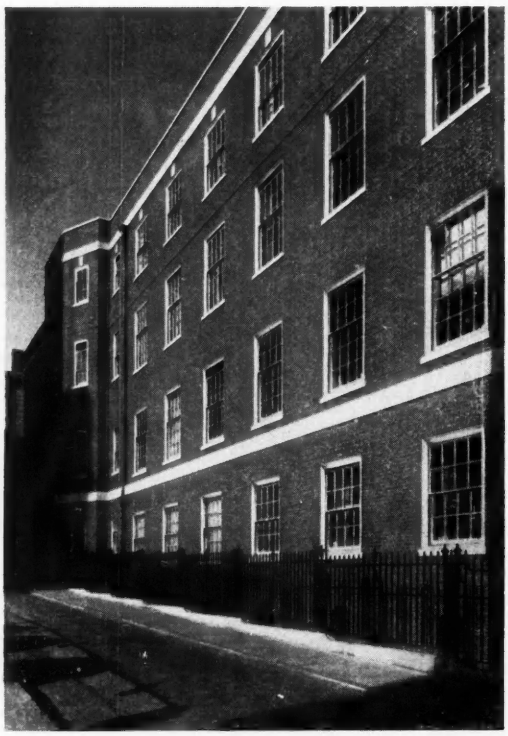
SIR HUBERT WORTHINGTON, ARA, FRIBA, ARCHITECT

in association with T. W. SUTCLIFFE, ARIBA, and J. H. HAYES, ARIBA

Quantity Surveyors : GARDINER & THEOBALD *Builders : HIGGS & HILL, LTD.*

THE problem posed in rebuilding those parts of the Temple destroyed or damaged in the air raids of 1940 and 1941 is no easy one. While it is essential that the Temple's traditional form of plan, architectural quality and intimacy of scale should be preserved, it is no less important that new buildings should be of this day and age; slavish imitation of earlier styles is not good enough. Like the law, buildings progress, and, like it again, by evolution. Considerations such as these have guided the rebuilding of the work of reconstruction on the Inner Temple so far completed, for which Sir Hubert Worthington





Front to Inner Temple Lane.

South entrance from Inner Temple Lane.

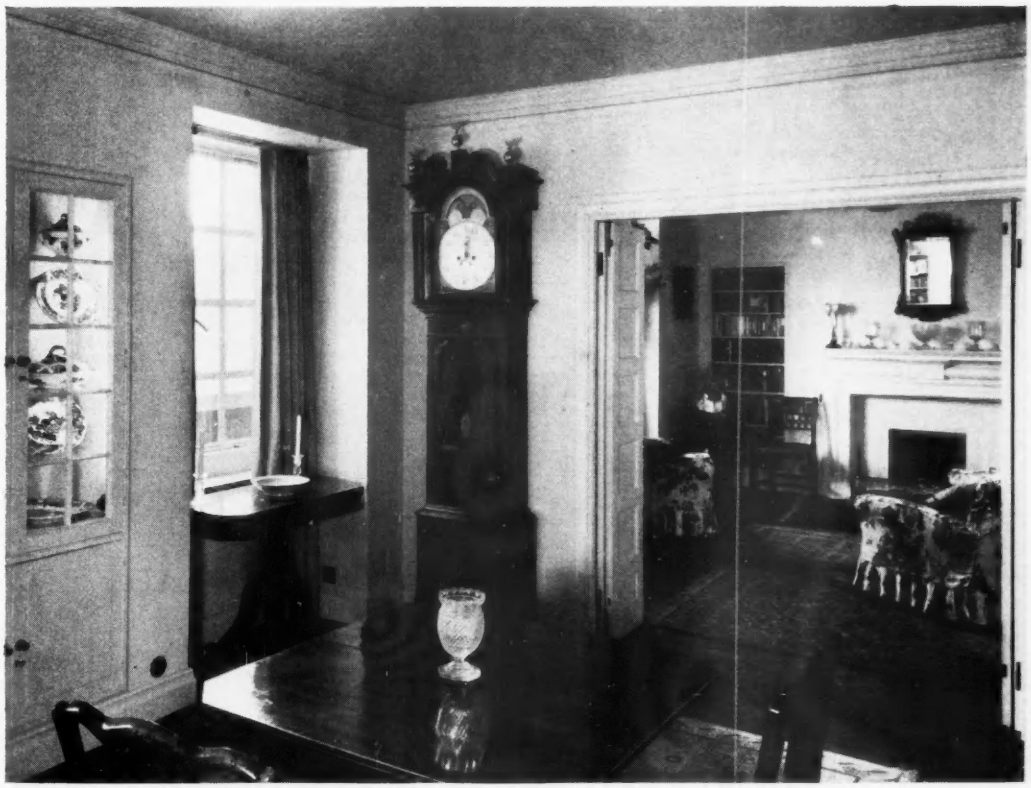
has been responsible. While in the restoration of King's Bench Walk, from end to end, and of Mitre Court Buildings, care has been taken to maintain the external designs as far as possible, whilst modernising the interiors, Harcourt Buildings, which we illustrate here, are of a new design, but one that maintains the character of the Temple. With Sir Hubert Worthington Mr. T. W. Sutcliffe, ARIBA, and Mr. J. H. Hayes, ARIBA, have been associated. This important new block of brick replaces the stone building that, put up by Sir Robert Smirke in 1832-33, was destroyed in the raids of 1941. Smirke's building had been preceded by an early eighteenth-century one. The new Harcourt Buildings are exactly 200 ft. long, and 38 ft. wide, with four bays on the east or garden side, relieving what might have otherwise been monotonous, and two bold entrance projections on the Inner Temple-lane, which give an effective perspective on looking up the narrow lane. Instead of the four staircases of the old building there are two staircases and two lifts, which give four large sets of barristers' chambers on each of four floors. Each set has four barristers' rooms and a clerk's room and a typist's room.

The main rooms overlook the wide quiet expanse of Temple Gardens, and those on the first floor, being higher than the others, form a "piano nobile," with tall windows and a balcony from end to end. The top floor provides four residential flats for benchers, commanding a fine view of the gardens and of St. Paul's Cathedral. The clerk of works was Mr. Alden.

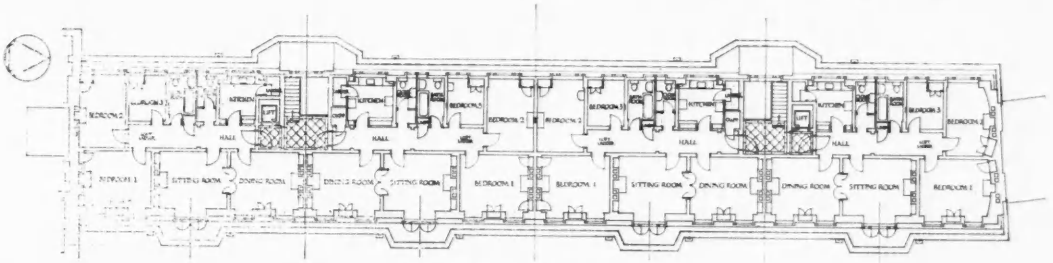
The building stands on the old Smirke raft of mass concrete, 6 ft. thick, and as solid as a rock. The materials are Dorking brick, beautifully laid, for the walls, Portland stone dressings, and a tiled mansard roof. The ironwork of railings and balustrades has been carefully detailed. The Pegasus, over the southern door, was salvaged from the old Library. The whole forms a notable addition to the buildings of the Temple.

Firms associated with the work were: G. S. Bacon and Son, internal plumbing; Birmingham Guild, Ltd., balustrading, bronze handrail, etc.; E. C. Blackmore, Ltd., iron railings; Bower Engineering Co., Ltd., electrical installation; Bratt Colbran, Ltd., fireplaces; F. Braby and Co., Ltd., copper roofing; Carter and Co. (London), Ltd., tiling; Comyn-Ching and Co. (London), Ltd., ironmongery; Empire Stone Co., Ltd., artificial stone; Fenning and Co., Ltd., Travertine surrounds and cills; Hadfields (Merton), Ltd., paint supplies; John Hall and Sons (Bristol and London), Ltd., glazing; Hollis Bros., Ltd., wood block flooring; Henry Hope and Sons, Ltd., metal windows; Laidlaw and Thompson, Ltd., Manchester, 4, ironmongery; Loft Ladders, Ltd., Bromley, Kent, loft ladders; J. Martin (Brockley), Ltd., external plumbing; Mundet Cork Products, Ltd., Croydon, cork floors; Plastering, Ltd., plastering; Roberts and Burling, Ltd., Croydon, roof tiling; John Shackleton and Son, Ltd., Goole, York stone paving; Shanks and Co., Ltd., sanitary fittings; South Western Stone Co., Ltd., Portland stonework; Stoner and Saunders, Ltd., leadwork; Sussex and Dorking United Brick Co., Ltd., Horsham, facing bricks; Val de Travers Asphalte Paving Co., Ltd., asphalt; and Waygood-Otis, Ltd., lifts.

Detail of wrought-iron railings.



HARCOURT BUILDINGS, INNER TEMPLE : View from dining-room into sitting-room of top-floor flat.



Fourth-floor plan, showing flats.

A flat kitchen.

Dining-room of top-floor flat.

View from John Adam-street.

NEWSPAPER OFFICES, JOHN ADAM STREET, WC

for Industrial Newspapers, Ltd.

LEWIS SOLOMON, SON & JOSEPH, ARCHITECTS

Structural Consultants
S. H. & D. E. WHITE

Builders
F. G. MINTER, LTD.

JOHN ADAM HOUSE, Adelphi, London, erected for Industrial Newspapers, Ltd., will house editorial and circulating departments. Bearing in mind the amount of accommodation required, the site was small, and the plan finally decided upon was one in which a single central staircase and lift give the only vertical circulation, together with an external metal fire escape staircase. It provides for easy sub-division of the office areas, and the basic 4 ft. 3 in. units of the fenestration allow for expansion of the minimum 8 ft. 6 in. office widths allowed in the first instance. Storage for the company's publications is provided in the basement. On the ground floor a large conference room was planned to meet the demand for conferences between the members of the industries represented by the various

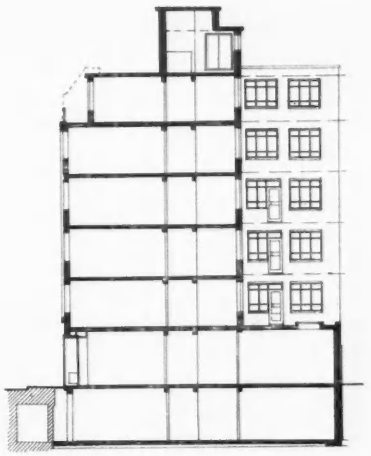
publications. The directors are housed on the first floor, the remaining space being taken up by offices for the editorial staff with the exception of the fifth floor which has a small canteen and kitchen at the rear, and studio and dark room.

CONSTRUCTION : Steel beams and stanchions with hollow tile or solid concrete floors and flat roofs. Upper-floor external stanchions to the two main frontages have been faced with Portland stone and are sub-divided by 4½-in. Portland stone mullions enclosing aluminium purpose-made windows, and 13½-in. brick in-filling panels. The brick panels have a flush Portland stone head and cill, the latter protected by an aluminium cill. The 4½-in. outer brick skin of these panels is of purple facings with vertical and horizontal " V " joints. Each panel has one louvred aluminium air brick. The whole of the upper-floor fenestration of each frontage is in each case contained in a large Portland stone frame with a light brown corner brick panel separating each frame.

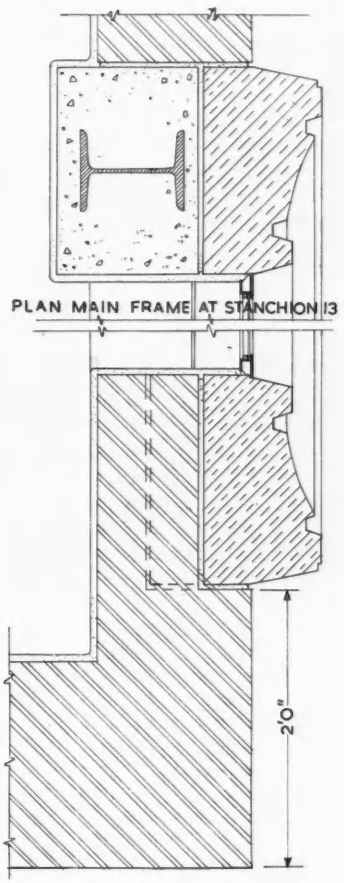
A grooved slate facing provides the division of the upper floors from the ashlar Portland stone facing of the ground floor, which also has grooved slate recessed plinth. The combined main entrance door and reception hall window is of aluminium with stove-enamelled door handles and lettering. Windows throughout are purpose-made aluminium. Three walls of the entrance hall are faced with fibrous plaster squares and one wall has walnut-veneered block board facing with a recessed black ebonised surround. The floor is of patterned terrazzo. The central heating system is heated by oil-fired boilers circulating hot water to gulf radiators. Sub-contractors and suppliers were :

Heating engineers : Young, Austen and Young, Ltd. ; aluminium doors and windows, Crittalls, Ltd. ; Portland stone, South Western Stone Firms, Ltd. ; terrazzo and slate facings : Art Pavements, Ltd. ; terrazzo cills and tiles in toilets, Zanelli ; Semastic and wood block floors, Hollis Bros., Ltd. ; electrical services, Berkeley Electrical Co., Ltd. ; handrails and balustrades, F. W. Clifford, Ltd. ; joinery, F. G. Minter, Ltd. ; asphalt, Ragusa Asphalte Co., Ltd. ; pavement and roof lights, Healey Bros., Ltd. ; sanitary fittings, Boldings, Ltd. ; ironmongery, Yannedis ; waterproof renderings, Sika ; and brick suppliers, Hendersons.

Left : The main entrance.



SECTION A-A

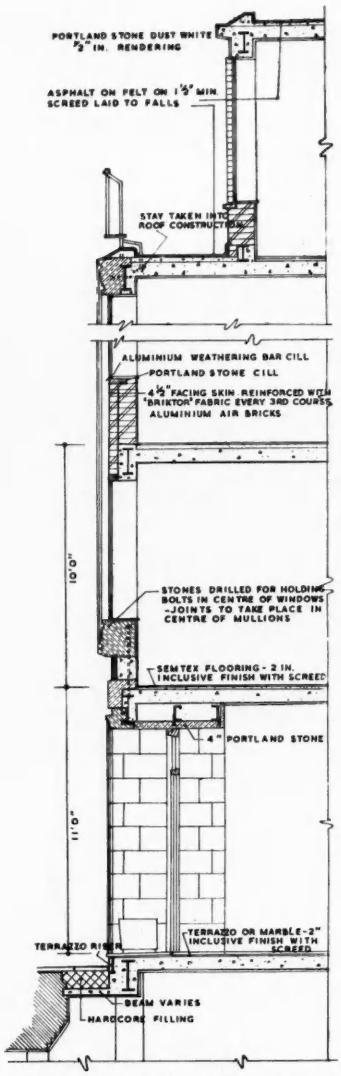


PLAN MAIN FRAME AT STANCHION 13

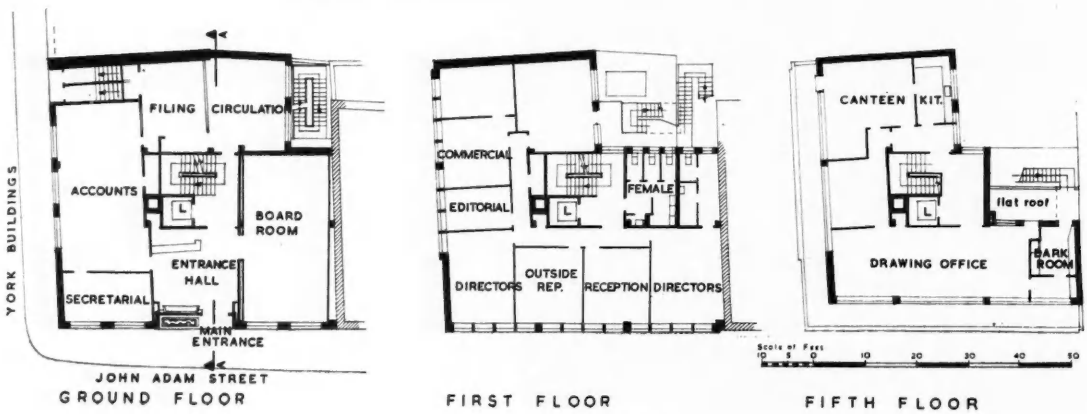
PLAN MAIN FRAME AT EAST CORNER

The entrance hall.

NEWSPAPER OFFICES, JOHN ADAM STREET : The board room.


PORTLAND STONE DUST WHITE ½" IN. RENDERING
ASPHALT ON FELT ON 1½" MIN. SCREED LAID TO FALLS
STAY TAKEN INTO ROOF CONSTRUCTION
ALUMINIUM WEATHERING BAR CILL
PORTLAND STONE CILL
4½" FACING SKIN REINFORCED WITH "BRIKTOR" FABRIC EVERY 3RD COURSE ALUMINIUM AIR BRICKS
10'0"
STONES DRILLED FOR HOLDING BOLTS IN CENTRE OF WINDOWS -JOINTS TO TAKE PLACE IN CENTRE OF MULLIONS
SEMTEX FLOORING - 2 IN. INCLUSIVE FINISH WITH SCREED
4" PORTLAND STONE
11'0"
TERRAZZO RISER
TERRAZZO OR MARBLE - 2" INCLUSIVE FINISH WITH SCREED
BEAM VARIES
HARDCORE FILLING

SECTION THROUGH EXTERNAL WALL



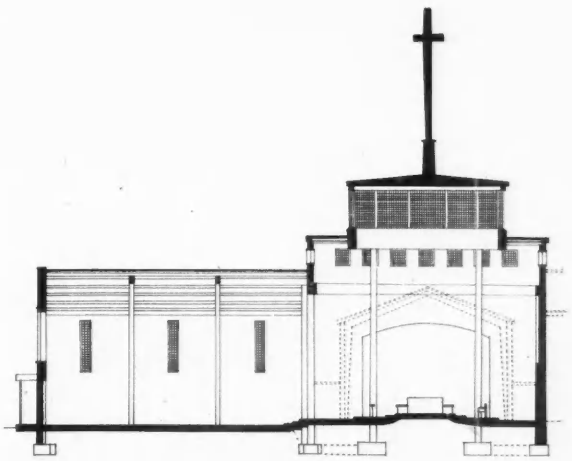
View of church from south-west. Below : Cross section.

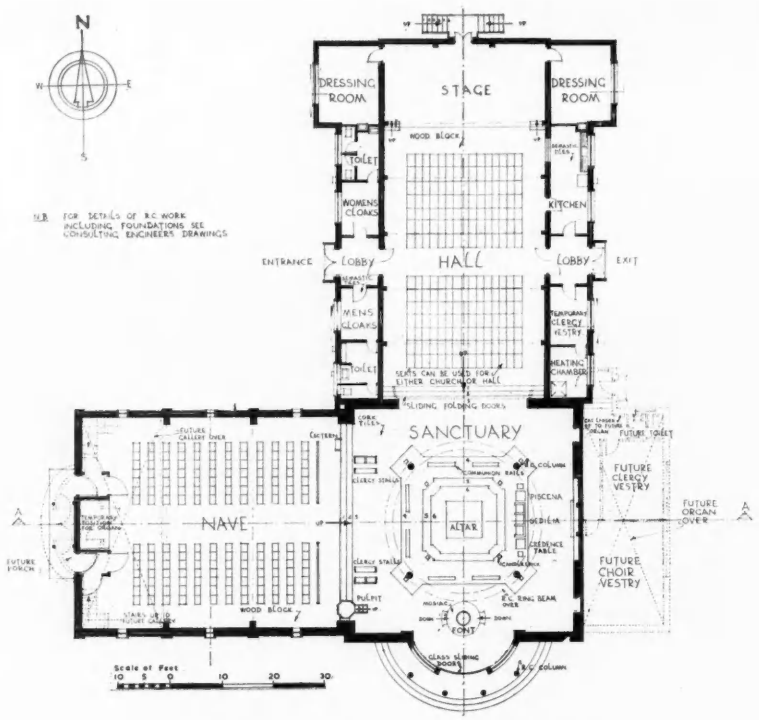
CHURCH OF ST. RICHARD, THREE BRIDGES, CRAWLEY

N. F. CACHEMAILLE-DAY & PARTNERS, FF.RIBA, ARCHITECTS

Quantity Surveyors : C. E. BALL & PARTNERS. Consulting Engineer: DONOVAN H. LEE, MICE

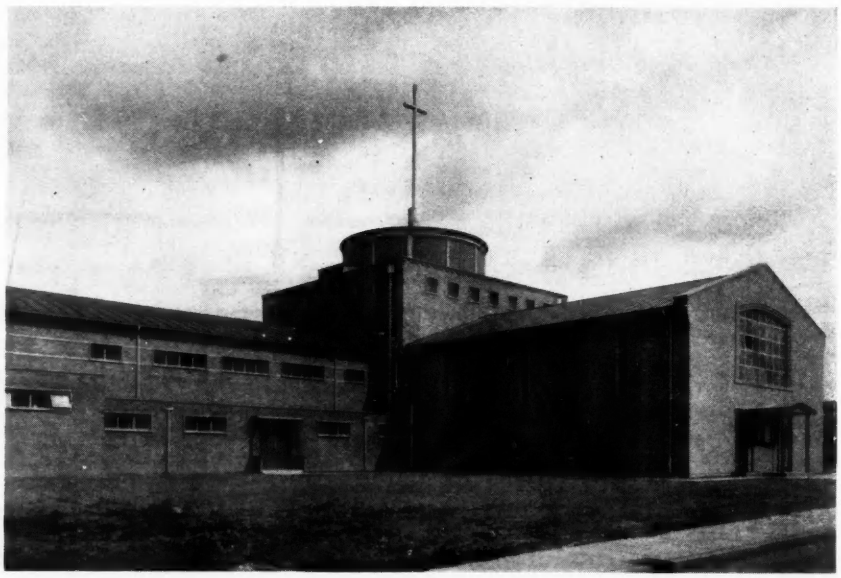
Builders : J. & C. BOWYER, LTD. General Foreman : H. C. HILL





Plan of church. Below: view from north-west.

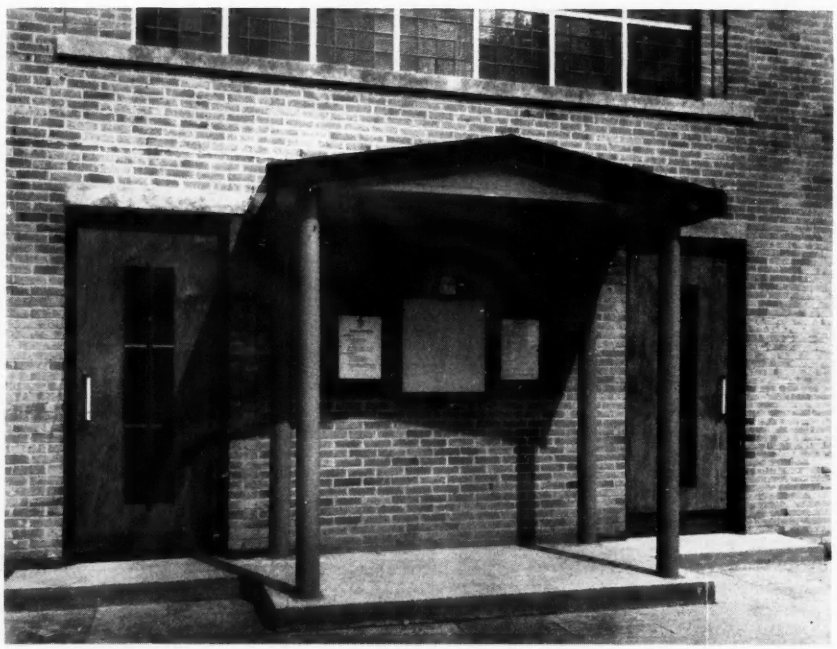
NAMED after the Patron Saint of the Diocese, this church was consecrated last July by the Bishop of Chichester, the Rt. Rev. G. K. A. Bell. Its plan gives the building a special interest, for the altar (whose frontal is in red and gold) is in a central position, axial with both nave and church hall, with communion rails on three sides ; these rails encase radiators. The pulpit is so placed that on special occasions part of the congregation, seated in the hall, can hear ; normally hall and church are divided by folding doors. The font is placed in the south transept, which is glazed, with big sliding doors which in warm weather can be opened to allow an outside congregation for baptisms. Construction is with a reinforced concrete frame infilled with stock bricks. Internally, bricks of a golden yellow have been used and



From a colour-transparency by Sydney Newbery, FRPS

CHURCH OF ST. RICHARD, THREE BRIDGES:

View from Nave looking towards Sanctuary.



Above: Detail of south transept. Below: Entrance to Church.

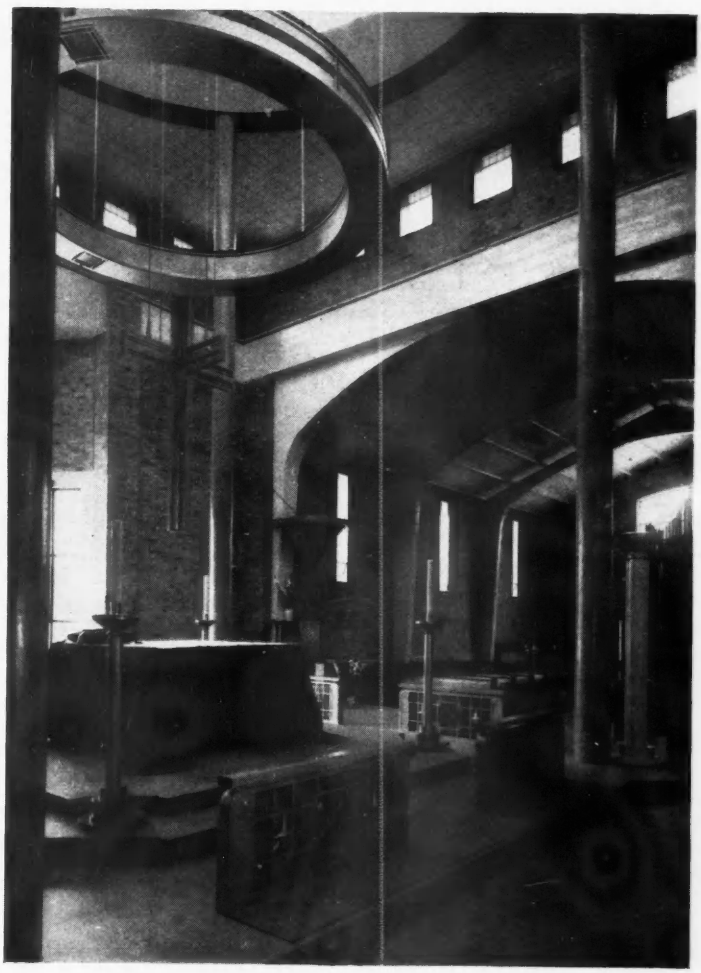
CHURCH OF ST. RICHARD, THREE BRIDGES

View of nave, looking towards the altar.

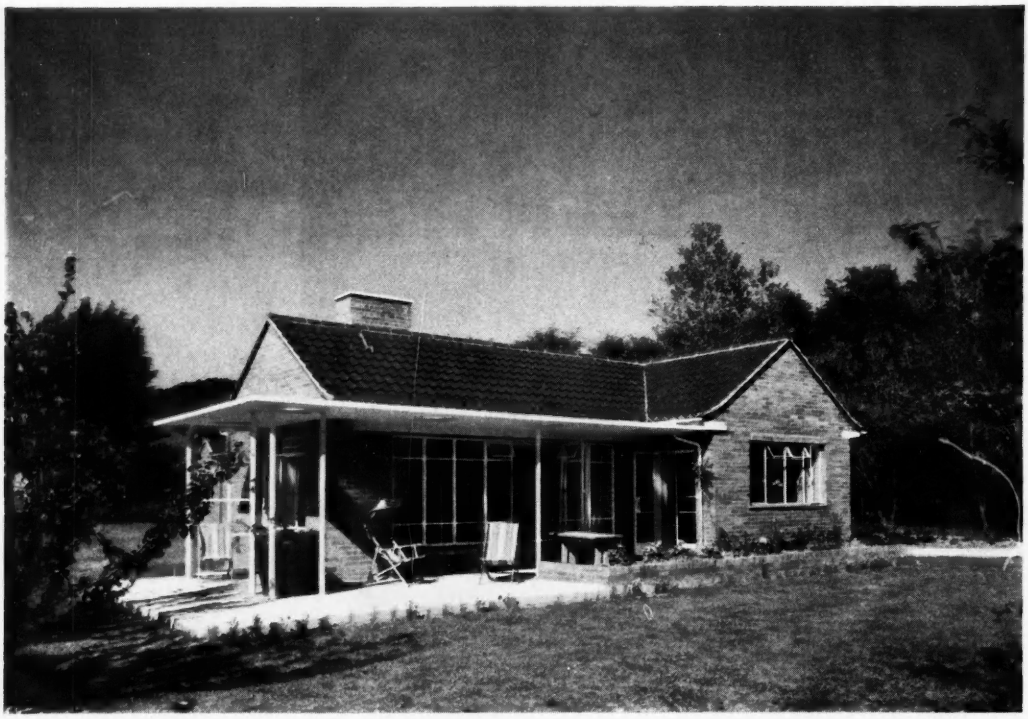
Below: View across the sanctuary towards the nave.

the concrete columns are painted blue. Orange-vermilion has been sparingly used on the concrete in the internal reveals to the chancel windows and to purlins, doors, etc., in the hall. The hanging Cross and communion rails are in metal cellulosed gold and silver, and the font is cellulosed silver with a golden dove. The sunk floor is blue mosaic. Oak furnishings, altar, pulpit, sedilia, credence, clergy stalls, etc., were supplied by Messrs. Jethro F. Harris and Moulder ; hanging Cross, corona, font, organ grille and light fittings in Sanctuary by Messrs. Hurst Franklin and Co., Ltd., while altar frontals, burse and veil, missal cushion, etc., were worked by Miss Jeoffroy. A list of firms associated with the work is as follows :—

Bricks, Hall and Co., J. Knowles and Co., and W. T. Lamb and Sons, Ltd. ; internal decorations and hall fittings, J. and C. Bowyer, Ltd. ; organ builders, Morgan and Smith, Ltd. ; copper roofing, Broderick Insulated Structures, Ltd., and J. and C. Bowyer, Ltd. ; windows and glazing, and glazed sliding door, Crittall Manufacturing Co., Ltd., and Goddard and Gibbs, Ltd. ; flooring—mahogany wood block, cork and Semastic—Horsley, Smith and Co. (Hayes), Ltd. ; heating, George Simpson (London), Ltd. ; electrical work, J. H. Plant, Ltd. ; electric light fittings in nave and hall, Falk Stadelmann and Co., Ltd. ; gas installation, South-Eastern Gas Board ; sanitary fittings, J. Knowles and Co. ; lightning conductor, W. Larkins ; acoustic material, Horace W. Cullum and Co., Ltd. ; ironmongery, G. and S. Allgood ; wrot-iron railings to hall, Clark, Hunt and Co., Ltd. ; chairs and wooden sliding folding door, Esavian ; glass bricks, Goddard and Gibbs, Ltd. ; lenscrete lights, Lenscrete, Ltd. ; prestressed concrete cross, Liverpool Artificial Stone Co., Ltd. ; foundation stone, E. J. and A. T. Bradford, Ltd. ; blue mosaic in baptistery, Fenning and Co. ; concrete paint, Inertol Co. ; and notice board, Harris and Moulder.



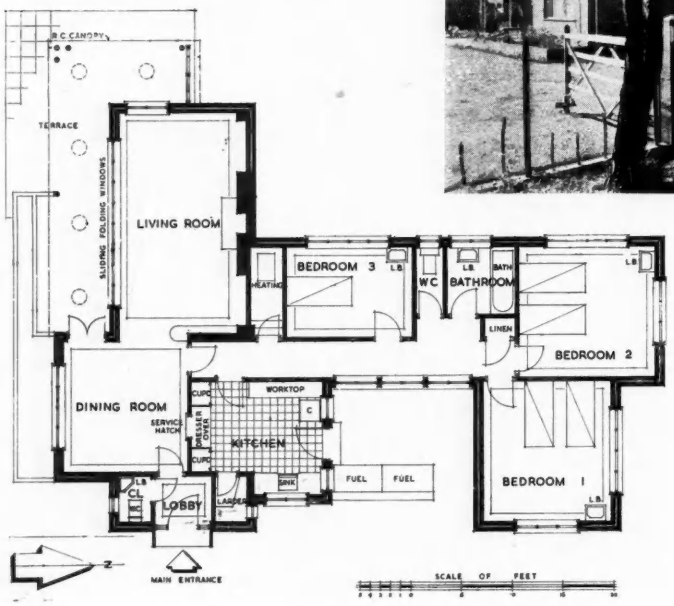
CHURCH OF ST. RICHARD, THREE BRIDGES, SURREY



JERSEY COTTAGE, FERRING-ON-SEA

Architects
OLIVER LAW & PARTNERS

Builders
E. PESKETT & SONS, LTD.



Top : The garden front. Centre : Entrance front from the road. Left : The plan of the house.

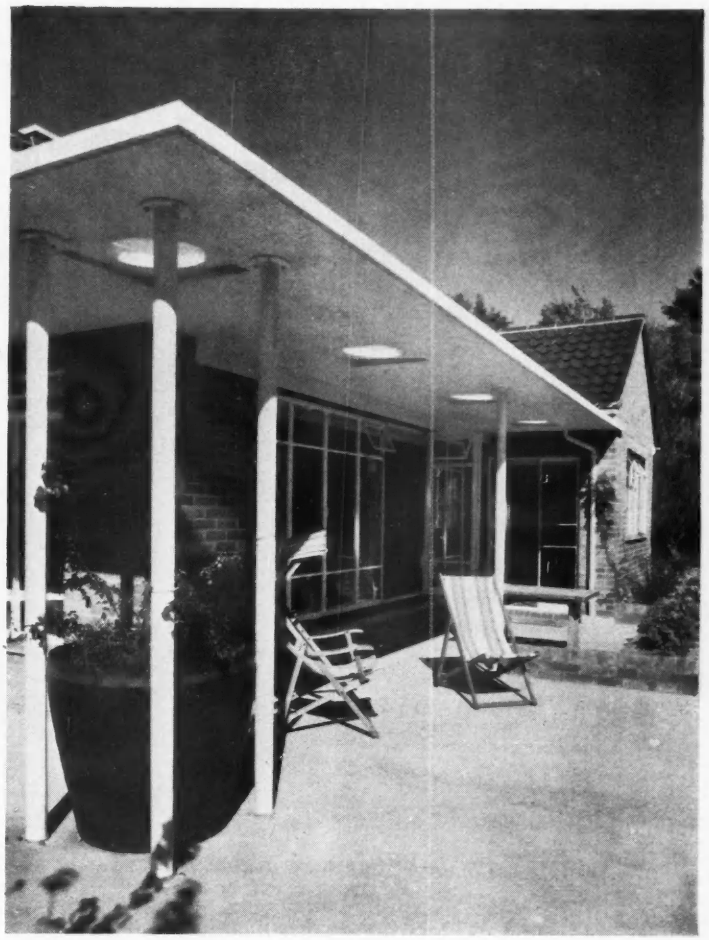
THE house, built at Jersey-road, Ferring-on-Sea, for Mr. Eric E. Van Lennep, was designed for occasional use rather than as a full-time residence. Probably one of the main features is the terrace with flat concrete hood over. This hood has been fitted with circular lights to enable a certain amount of sunlight to be transferred to the terrace, and also to assist in lighting the living-room.

The living-room has specially-made large sliding windows which fold back on either side so that the whole can be practically thrown into the terrace. It will also be noticed that there is a glazed screen at the side of the terrace for affording additional protection from the wind. The dining-room and living-room are communicating, as shown on the plan. There is only one coal fire in the living-room, the whole of the rest of the house being centrally heated with a gas-fired installation. In this connection particular attention may be drawn to the long radiators beneath the large living-room window and the two radiators on either side of the same window. These are encased with anodised aluminium louvres in front and work on a convector principle.

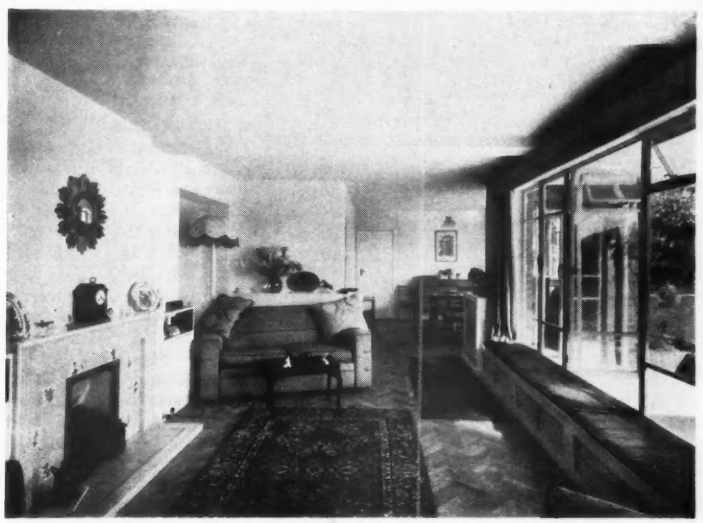
The house is built in Ibstock facing bricks of a pinkish appearance, and the roofs are covered with dark brown pantiles. Floors throughout are wood block except in the kitchen, bathroom and cloakroom, which are rubber covered. As may be seen from the plan, there are fitted lavatory basins in the bedrooms and also fitted cupboards.

The principal sub-contractors and suppliers were as follows: Ibstock facing bricks supplied by W. L. Jackson and Co., Ltd., SW1; heating, H. W. Dutton and Co., Ltd., SW1; lounge room fireplace, Bratt Colbran, Ltd., W1; sanitary fittings, Alfred Goslett and Co., Ltd., WC2; flooring, Hollis Bros. and Co., Ltd., EC1; pantile roofs, Finnis, Nicholls (Roofing), Ltd., SW1; and metal windows, Wainwright and Waring, Ltd., SW6.

JERSEY COTTAGE, FERRING-ON-SEA



Detail of terrace from the garden.



View in living-room.

View from the north-east.

Cathedral Library, Canterbury

JOHN L. DENMAN, FSA, FRIBA (DENMAN & SON), ARCHITECT

Quantity Surveyor
H. P. POWELL, FRICS

Heating Consultants
OSCAR FABER & PARTNERS

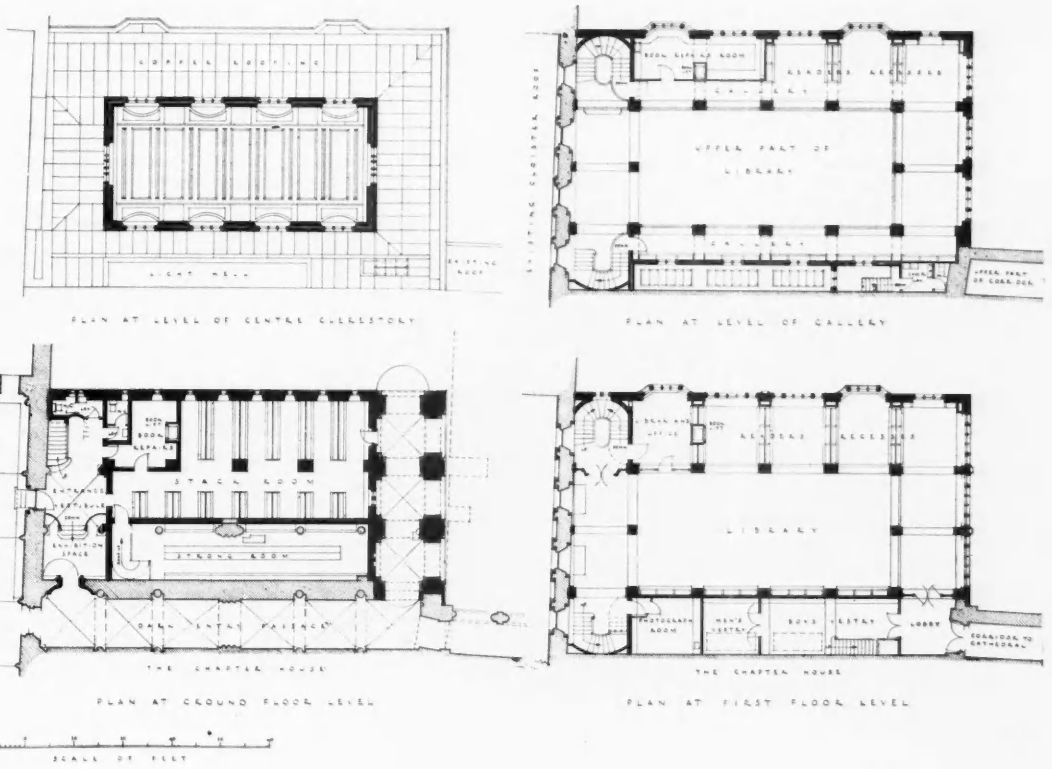
Builders
G. H. DENNE & SON, LTD.

BEFORE describing the new Cathedral Library, it may be of interest to refer briefly to some of the more important buildings which originally occupied the site and their uses, and to explain how fragments belonging to them, which date from the 11th century, have been spared in spite of numerous recurring changes and destruction during the intervening centuries.

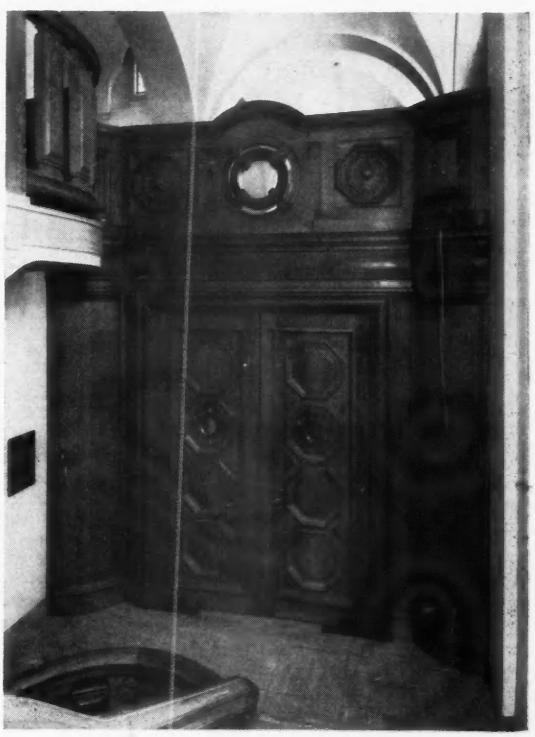
In the year 1868 Professor Robert Willis published in Archæologia Cantiana (Vol. VII) the historical account of his investigations and discoveries of the 11th-century Dormitory with its Undercroft which formed part of the conventual buildings of the Monastery of Christ Church at Canterbury ; but, despite the publication of his detailed research, it may be doubted whether many visitors realised, until recently, that there existed beneath the mound northwards of the old Library extensive remains of the Undercroft of Archbishop Lanfranc's splendid Dormitory.

In the year 1067 the Saxon Cathedral and most of the monastic offices were destroyed by an accidental fire which, however, spared the earlier dormitory, the refectory and part of the cloisters. About three years after this occurrence, Lanfranc, Abbot of Caen, was made Archbishop of Canterbury and courageously undertook the great task of rebuilding the church and monastic buildings which he then found in a state of ruin. He rapidly completed this work but having subsequently ordained that the Monastery of Christ Church should provide for as many as 140 to 150 monks, he then found it necessary to extend the accommodation, and pulled down his first buildings and erected others, including the Dormitory with its Undercroft, and the adjoining Necessarium—all of which remained in use until the dissolution of the Monastery in 1541.

The dormitory and undercroft extended beyond the north wall of the present Chapter House for a distance of 148 ft. and had a width of 78 ft. from the east wall of the Great Cloister. The dormitory was divided into two equal naves by arcaded walling running longitudinally from north to south. This division was formed as a series of piers and arches to support the junction of the two equal shaped roofs which covered each nave of the dormitory. The undercroft was similarly divided into two portions by a massive wall having openings formed therein for communication between the two sections. In addition, the undercroft was subdivided into bays—three on each side of the massive central walling and 11 from north to south—the southernmost range forming what is now known as the Dark Entry passage which led from the Great Cloister to the Infirmary. Each bay was set out on a grid spaced at approximately 12 ft. 3 in. centres with columns at the four corners of each bay to support the intersecting ribless groined vaulting which carried the floor of the great dormitory 13 ft. above that of the undercroft. The new Library has



A corridor at the gallery level.



Main entrance doors to Library.

been planned on approximately the same square grid of 12 ft. 3 in. centres.

THE "GREAT DORTER"

In 1547 the Chapter decreed that "ye great dorter shall bee taken downe and with ye stuffe thereof coming to be builded certaine lodgings for ye Pety canons and vicars, and other houses of office to them by ye discretion of ye Prebendaries." The dormitory was then demolished down to its floor level. The west wall containing the four original Lanfranc windows which overlooked the roof to the east walk of the Great Cloister was retained. The south wall of the dormitory also remains. It had two gables to suit the shape of the twin roofs which covered the dormitory. This southern wall was penetrated by two 15th-century windows to provide clerestory lighting to the southern end of the dormitory above the lower roof of the original Norman chapter house. This wall was afterwards raised to suit the increased height of the chapter house. Portions of the northern end of the dormitory are also still in existence, and the southern range of bays to the undercroft still forms the Dark Entry passsage. A beautiful Norman doorway leading from the eastern alley of the Great Cloister into the undercroft was disclosed in 1813.

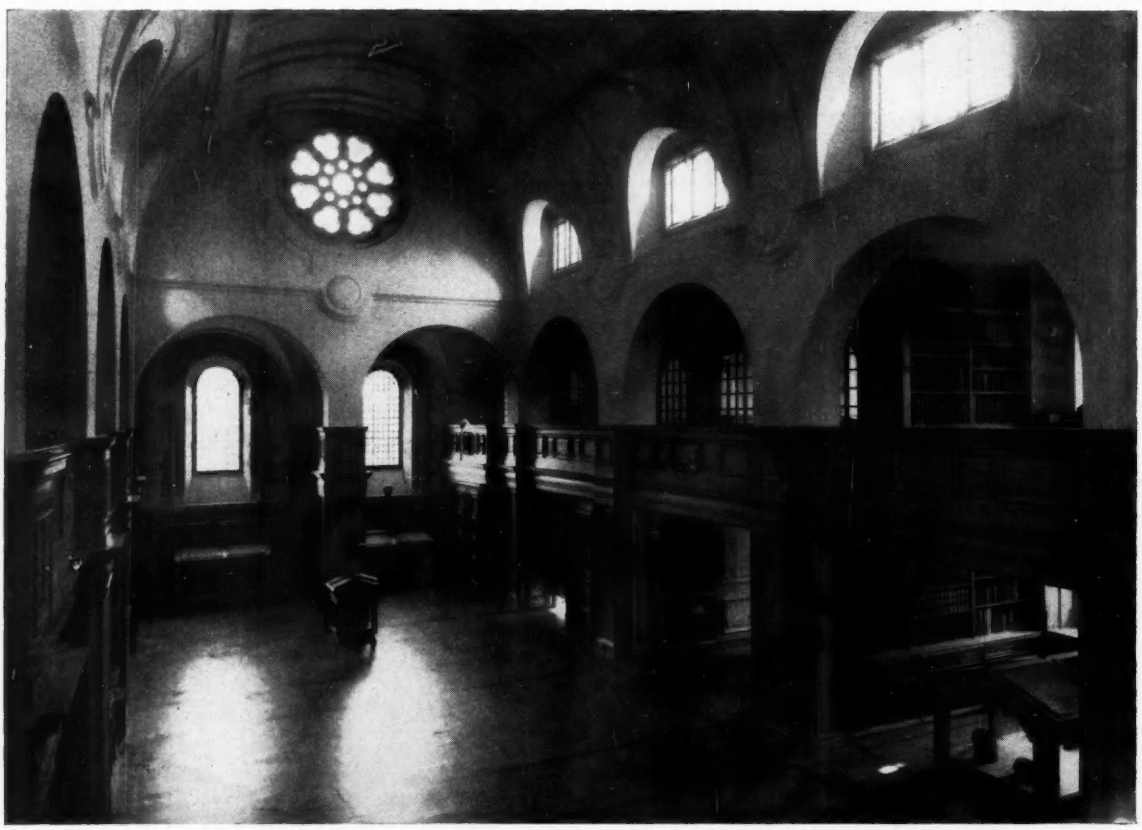
THE WARMING HOUSE

It is believed that the Common Room or Warming House (the Chauffoir or Calefactorium) was situated in the south-east corner of the undercroft immediately north of the Dark Entry passage. Here, after the night's offices and the chanting of lauds at dawn, the benumbed monks in winter warmed themselves and also greased their sandals preparatory to commencing their daily tasks.

When Lanfranc's dormitory was destroyed in 1547, the remainder of the undercroft was filled with earth within the old surrounding walls. Trees grew up and two private houses were erected with gardens and yards above the old vaulting beneath. Thus the site and the remaining fragments of Lanfranc's 11th-century walling remained without further disturbance until the year 1867 when the Chapter decided to build a new library to house the valuable manuscripts which belong to the Cathedral. This library covered from north to south four ranges of the original bays to the undercroft, including the Dark Entry passage. Portions of the piers and walling of the undercroft were built into the substructure of this library, of which the late H. G. Austin, junior, was the architect, whose father designed the two western towers of the Cathedral. The floor level of the library was approximately the same as that of the original Dormitory. The building was orientated east and west, and comprised a central nave with aisles on each side, the southern aisle being above the Dark Entry passage. Above the arcades to each aisle the library was lighted by clerestory windows with rose windows in the east and west gables.

AN INTELLECTUAL CENTRE

The librarium was an important feature in monastic establishments. It was usually situated near the cloister, the intellectual centre of monastic life. At Canterbury, however, the ancient 14th-century monastic library, adorned by William Selling (Prior from 1472-94) was built above the Prior's chapel, dedicated to the Virgin Mary and erected by Roger de Elphege (Prior from 1258 to 1263). The Prior's chapel was situated at the floor level of the Cathedral choir between the west wall of the Norman infirmary and the lavabo, now known as the Water Tower. The ancient Library was added about



General view of the interior looking west, showing the windows of the Lanfranc Dormitory.

100 years later above the Prior's chapel, the pitched roof of which was removed to form the floor of the library. Some of the old vaulting corbels which supported the floor of the Prior's chapel can still be seen in the existing wide covered walk east of the Water Tower. A fire occurred in this Library during the reign of Elizabeth I, when many valuable treasures were lost, amongst them a manuscript of "Cicero de Republica." The chapel and the library above it were demolished in about the year 1700, and were then replaced by the brick-faced building that still remains in this position, which served as the Cathedral library until Austin's library was erected in 1867.

Trinity Sunday, May 31, 1942, was the night of the first great air-raid on the city of Canterbury, when, by the Control room clock, it was recorded that bombs continued to fall for one hour and 20 minutes. At five minutes to one o'clock a high explosive bomb with delayed action of about six seconds fell directly on the library, plunged into the ground and blew everything up with it, even including trees which the next morning were lying with their roots in the air. But there was no fire and therefore no water, so that many of the books were only slightly damaged. All MSS, seals and charters had been placed in safety elsewhere on the outbreak of war. The south wall of the library adjoined the north choir aisle, so that in terms of bombing, a split second could have landed the bomb in the midst of the choir itself. The escape was miraculous indeed, for a photograph taken a day or two later gives some idea of the scene of devastation when death and destruction came out of the sky on a cloudless full moon night. Three weeks later the Mayor of Canterbury called the citizens together for a short and moving service taken by Archbishop William Temple in the nave of the Cathedral, when he led the people in thanksgiving "that this beautiful and holy house of prayer is not damaged beyond repair." The Archbishop having given the people his blessing, the Mayor and City Council, soldiers, civil defence workers, nurses, scouts and guides with many hundred citizens streamed out of the nave to music played by the band of The Buffs.

WORK OF REBUILDING

Owing to the difficulties of the post-war period, over nine years elapsed before the rebuilding of the Library could be commenced. Thanks to the generosity of the Pilgrim Trust, to the good will of the War Damage Commission and the assistance of the Ministry of Works in granting the necessary building licence, it was possible on June 11, 1951, for the Chapter to enter into a building contract and the rebuilding proceeded forthwith.

Main entrance from the "Dark Entry."

The new library occupies the same site as Austin's library above described, but comprises three storeys instead of two. It is approached by a new doorway from the Dark Entry passage which opens into the lower vestibule adjoining the stack room and strong room. The staircase from this vestibule leads to the main library, the floor of which is at the same level as that of the north-east transept of the Cathedral.

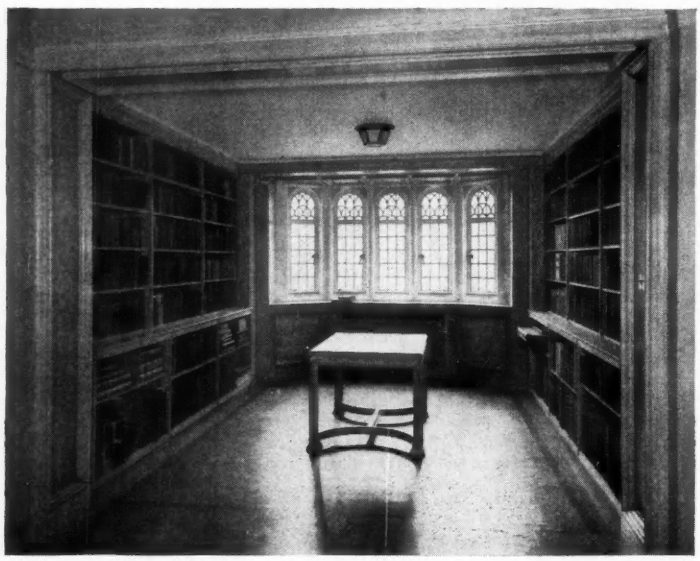
The Librarian's office adjoins the staircase with readers' recesses having oriel windows along the north side of the library. On the south side a dark room and vestry accommodation for the Cathedral choir are provided above the Dark Entry passage between the library and the chapter house. The staircase is continued up to a gallery which surrounds the north, east and south sides of the library with a second staircase at the south-west corner down to the main floor level. Readers' recesses and a book bindery are also provided along the north side of the gallery.

LANFRANC WINDOWS

The four Lanfranc windows form important features in the ancient west wall, the library having been planned to incorporate them within the structure. The new building has been designed so that it is subordinated to and harmonises with the setting of the ancient buildings by which it is surrounded, and great care has been taken to retain every relic of the past including all the piers of Lanfranc's undercroft which were disclosed when the 19th-century work was opened up. Some of these were discovered within the space occupied by the new strong room where they are now carefully preserved. Several of the old piers were embedded in the foundation walling, and some have now been disclosed on each side of the Dark Entry passage.

An arcaded cloister has been formed beneath the eastern end of the library as an approach from the Dark Entry passage to the Water Tower garden, and also to the garden which now

The entrance doors, showing on the left the Lanfranc window to the old Dormitory.



A reading bay in the Library.

occupies the remainder of the site of Lanfranc's undercroft to the north which is set amidst the ruins that were found when the earth filling was removed.

STONE AND FLINT

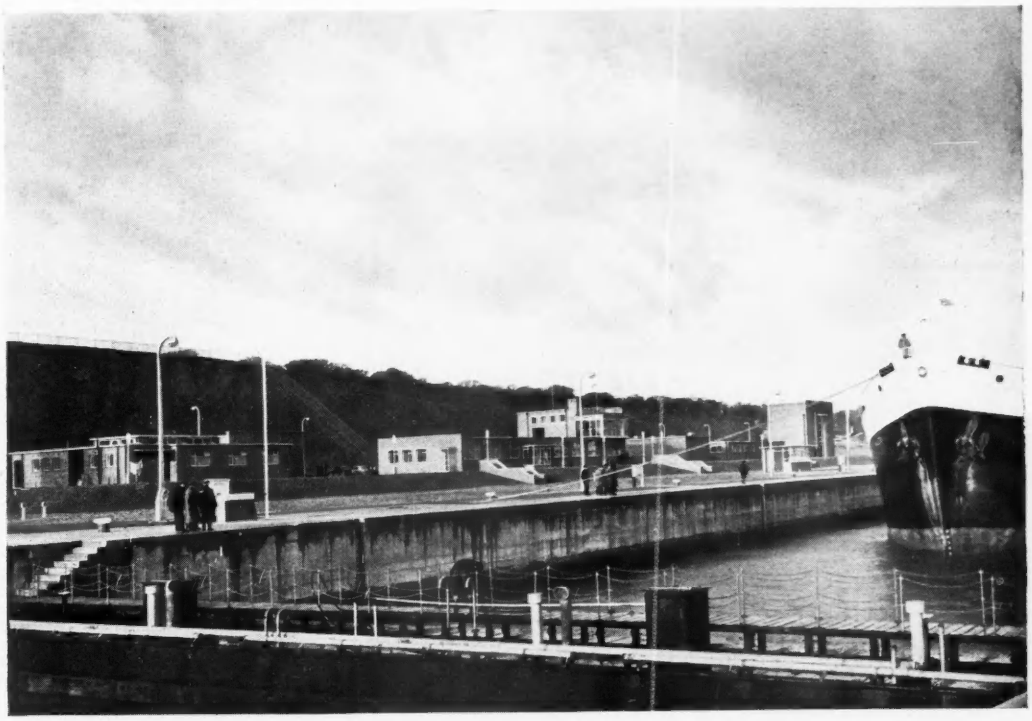
The building is faced externally with stone and flint, the lower part of the north front being faced with Caen stone reused from other old buildings. The lead rainwater head at the north-east corner of the building was given by the Kent Council for the Registration of Plumbers.

The interior of the library, including the shelving, is lined with oak, the whole of the joinery having been executed in Canterbury by Messrs. G. H. Denne and Son, Ltd., of Canterbury, who were responsible for the erection of the building. A special tribute should be given to Mr. F. Harris of that firm for all his care and attention throughout the work, to Mr. Cheney, the general foreman and to Mr. C. Overton, the foreman of the joinery works.

JOHN L. DENMAN

Other firms associated with the rebuilding of the library were : Stone work, The Bath and Portland Stone Firms, Ltd., Bath ; heating installation, Benham and Sons, Ltd. ; steelwork, Matthew T. Shaw and Co., Ltd. ; Travertine flooring, C. Walker and Co., Ltd. ; cork flooring, The Cork Insulation and Asbestos Co., Ltd. ; glazing, Alfred Olby, Ltd., Ramsgate, Kent ; fibrous plasterwork, Day and Parker, Ltd., Brighton, 7, Sussex ; and electrical work and joinery, G. H. Denne and Son, Ltd. (the general contractors).

CATHEDRAL LIBRARY, CANTERBURY

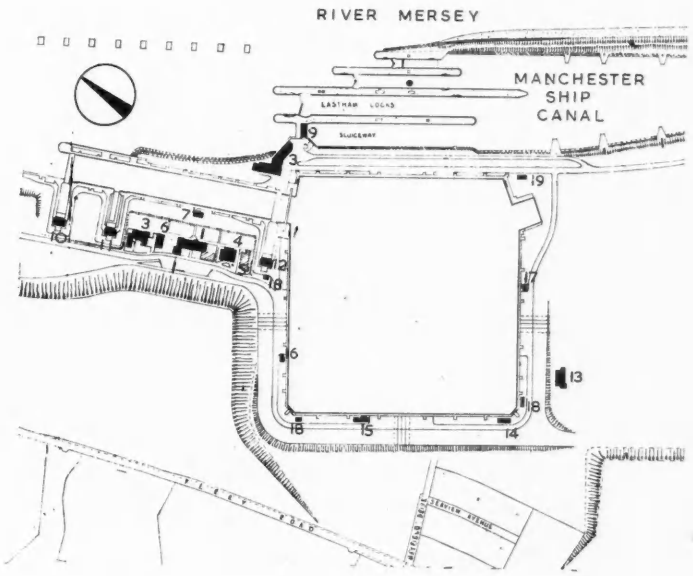


General view of administrative buildings from north side of entrance lock. Below: Site plan.

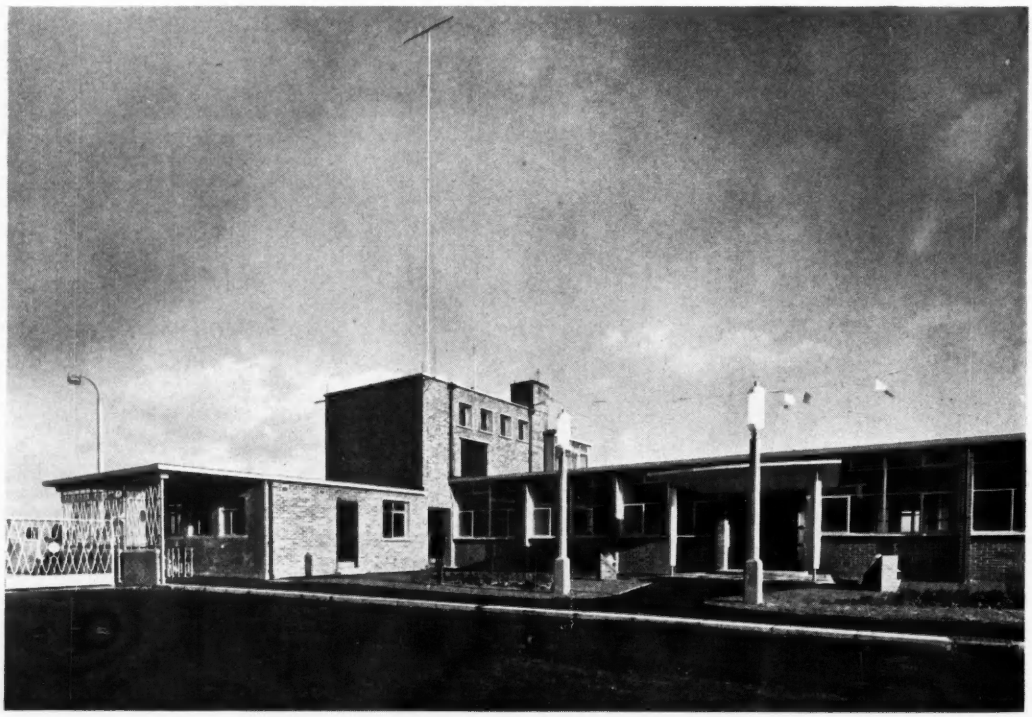
QUEEN ELIZABETH II DOCK ON MANCHESTER SHIP CANAL

Architects
THE LATE K. RUSSELL BRADY, FRIBA, in association with CRUICKSHANK & SEWARD, FRIBA

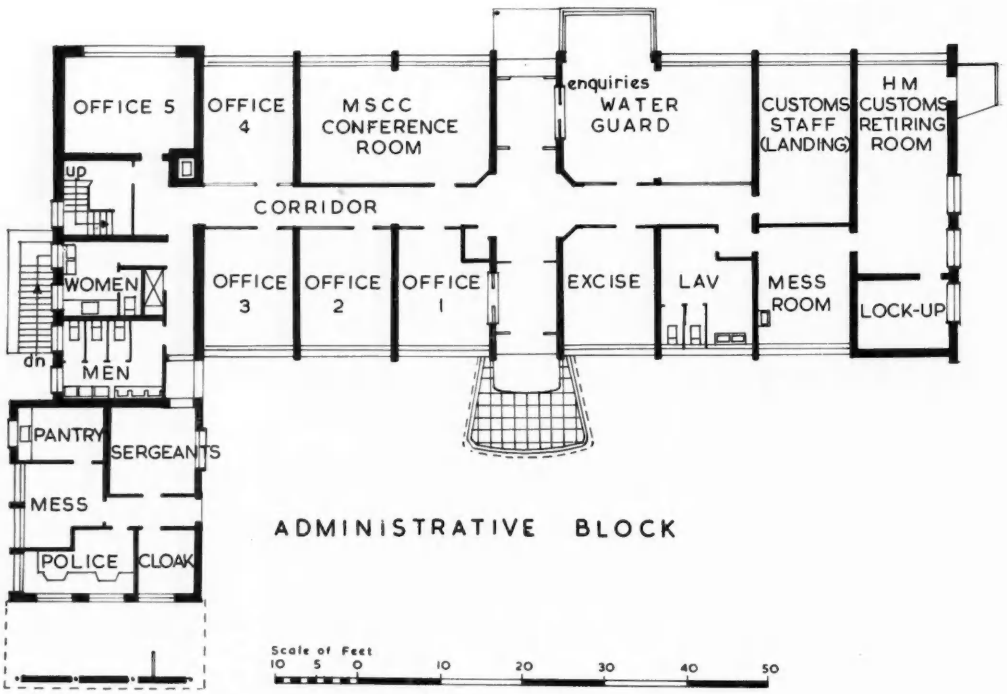
Builders
SIR ALFRED McALPINE & SON, LTD.

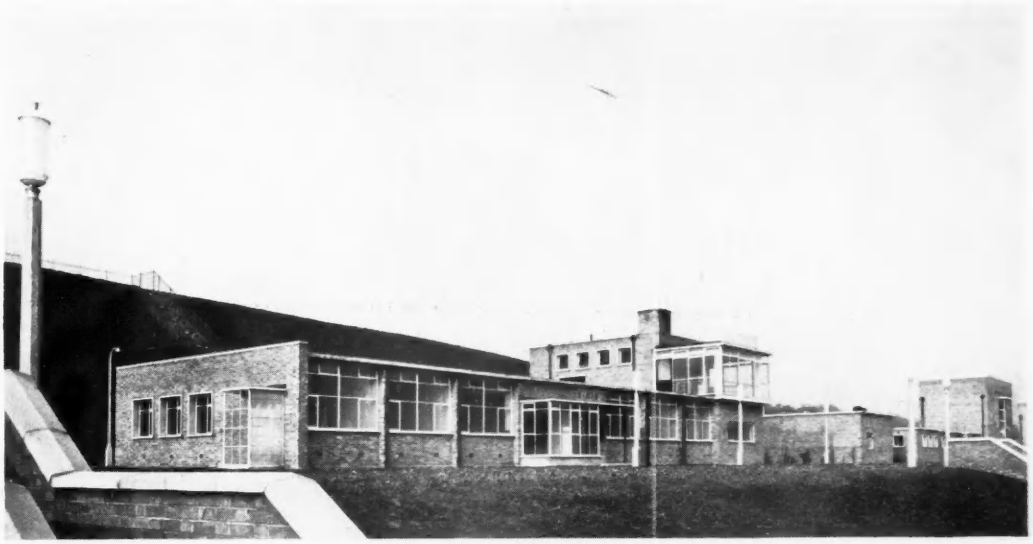


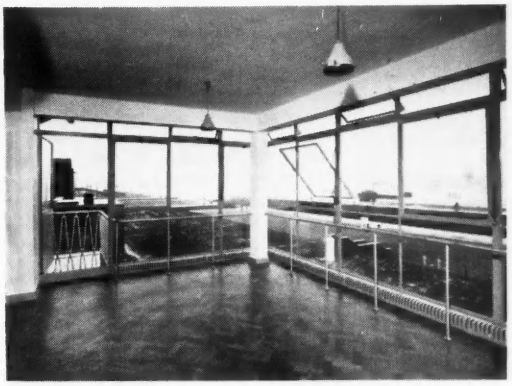
1 Admin. block.
2 Ancillary undertakings.
3 Pilots' block.
4 Canteen.
5 Crews' smoke room.
6 Transformer house.
7 Lockgatemen's shelter.
8 Mech. Engrs. Workshop.
9 Harbourmaster's office.
10, 11, 12, Winch houses.
13 Crews' smoke room.
14 Oil hose store.
15, 16, 17 Pipe attendants.
18 Fire appliance buildings.
19 Boatmen's shelter.



Part of south elevation of administrative building.







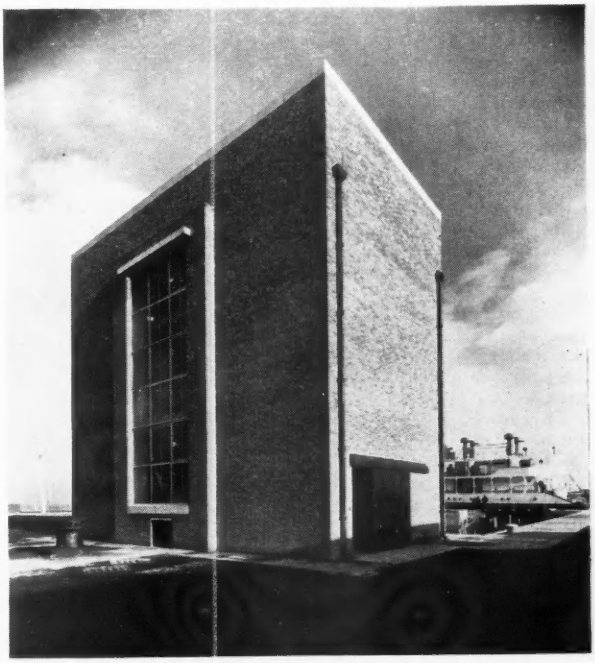
Above: Elevation to lock of administrative building as seen from the east.

Left: Interior of observation room in administrative building.

Below: Rear elevation of a winch house.

THE Queen Elizabeth II Dock, recently completed for the handling of the world's largest oil tankers, is situated near the village of Eastham, where the Manchester Ship Canal comes down to the tide water in the estuary of the River Mersey. This dock is the largest oil dock in Great Britain and covers an area of 19 acres.

The buildings, some 20 in number, are placed strategically around the dock, and were designed to fulfil the requirements laid down by the Manchester Ship Canal Company, and they are divided into three groups with the winch houses, the pilots' block, main electricity substation, administrative building, canteen and lockgatemen's shelter on a plateau overlooking the entrance lock; fire appliance buildings, pipe attendants' buildings, oil hose store, crews' smoke room block, and boatmen's shelter placed around the perimeter of the dock; and the mechanical engineers' workshops and harbourmaster's control building situated close to the Ship Canal entrance locks.



South elevation of harbour-master's control building.

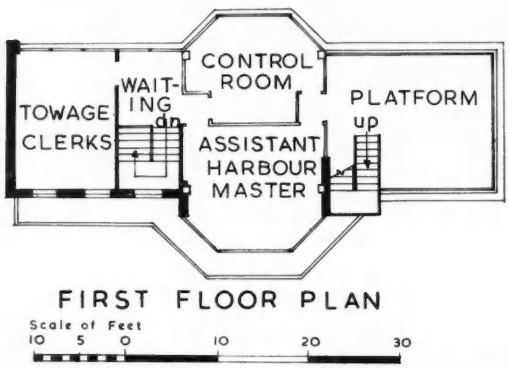
The three winch houses enclose the electric and hydraulic winches that draw the 1,700-ton caisson lock gates into the cambers. They are steel framed, clad in brickwork, and special attention was paid to visibility for the winch operators. The pilots' block provides living and sleeping accommodation for river and canal pilots and helmsmen, who maintain a 24-hour service.

Offices for the Manchester Ship Canal Company staff, and HM Customs and Excise, are housed in the administrative buildings, together with the main police control post. This building also contains the main central heating plant, comprising oil-fired boilers, storage tanks, etc.

The canteen block provides dining-rooms and lavatory accommodation for crews and staff, officers and executives, and a flat for the caretaker.

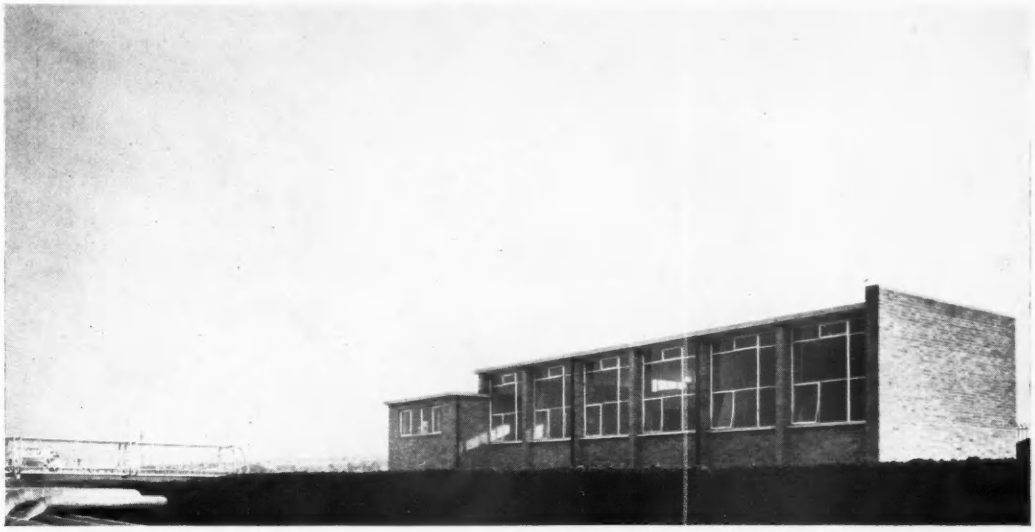
The crews' smoke room block has accommodation for ships' crews and officers, and provides recreational facilities. Two fully equipped galleys are provided for both European and Asiatic crews.

The mechanical engineers' workshop building contains a smithy, stores, workshops, emergency pump house, lock crews' mess rooms, offices, divers' changing rooms, Post Office, first-aid room and lavatories. All the movements, ship to shore communications, and dock and canal shipping control are directed from the harbourmaster's control building. Special attention was paid to the planning and siting of this building which is situated over the sluiceway of the canal system and carried on beams spanning 54 ft. Following is a list of sub-contractors:



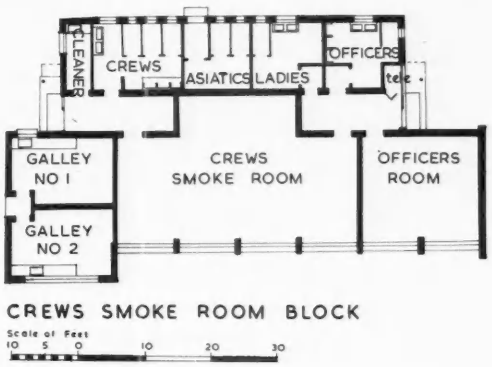
Steel reinforcement for foundations, Twisteel Reinforcements, Ltd.; precast concrete roof and floor units, Matthews and Mumby, Ltd.; plumbing and sanitary engineering, A. Longworth and Sons, Ltd.; sewage disposal plant, Adams-Hydraulics, Ltd., and Wm. E. Farrer, Ltd.; electrical installation, Robert Springer, Ltd., and Mersey and North Wales Electricity Board; heating installation, Dodd Engineering Co., Ltd.; wall and floor tiling and terrazzo paving, partition and wall linings, Conways, Ltd.; asphalt roofing and tarmacadam paving, Penmaenmawr and Trinidad Lake Asphalt Co., Ltd.; metal windows and rooflights, Doodson and Bain, Ltd.; reconstructed stone, Girlings' Ferro-Concrete Co., Ltd.; wood block floors, Hollis Bros., Ltd.

Rubber flooring, Redfern's Rubber Works, Ltd.; architectural metalwork, Brookes and Co. (1925), Ltd.; cooking equipment, Falkirk Iron Co., Ltd.; landscape gardening, Bees, Ltd.; decorative glass, Charles Lightfoot, Ltd.; lightning conductors, John Faulkner and Sons, Ltd.; wood partitions, Pochins (Manchester), Ltd.; ironmongery, Parker, Winder and Achurch, Ltd.; "Sika" waterproof rendering, W. J. Harries, Ltd.



Crews' smoke room building.

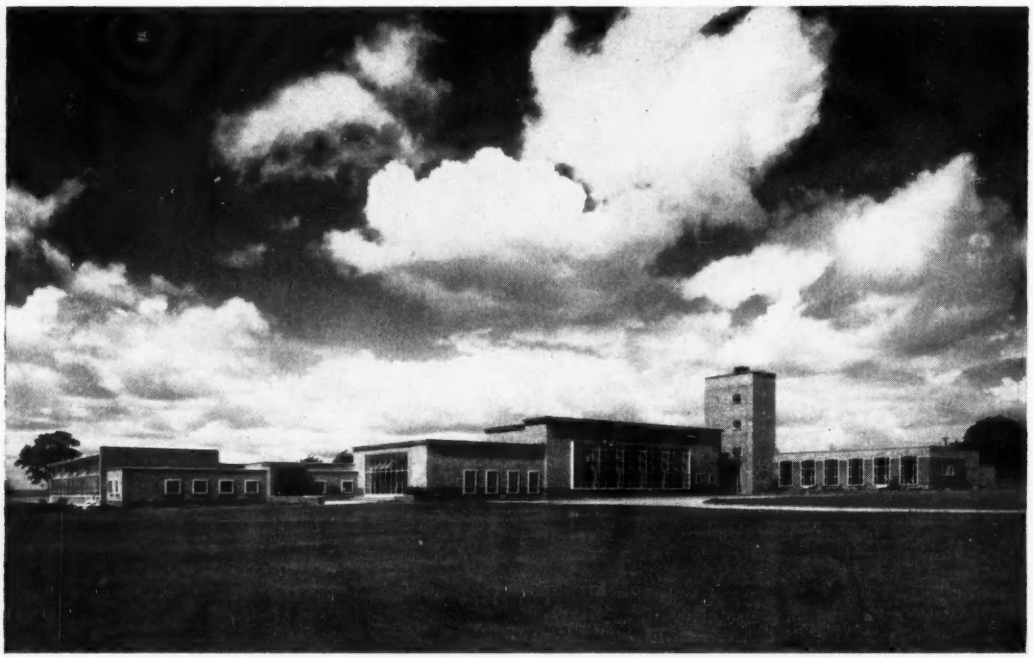
CANTEEN



CREWS SMOKE ROOM BLOCK

View of canteen and manager's flat from the north.

QUEEN ELIZABETH II DOCK ON MANCHESTER SHIP CANAL



View from the east. Below : plan of the school.

RONKSWOOD SCHOOL, for the County of the City of Worcester

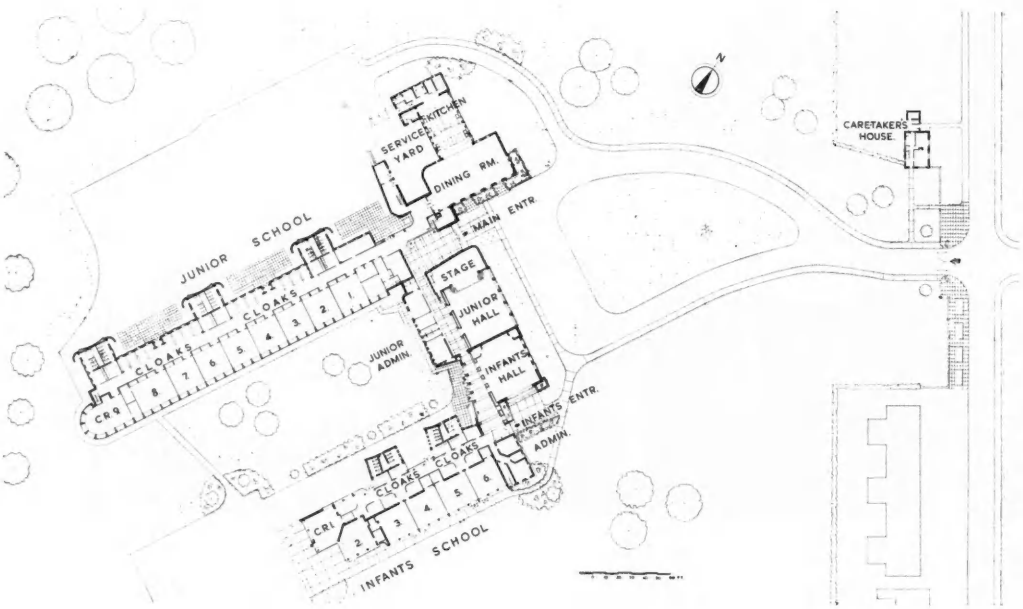
JACKSON & EDMONDS, FF.RIBA, ARCHITECTS

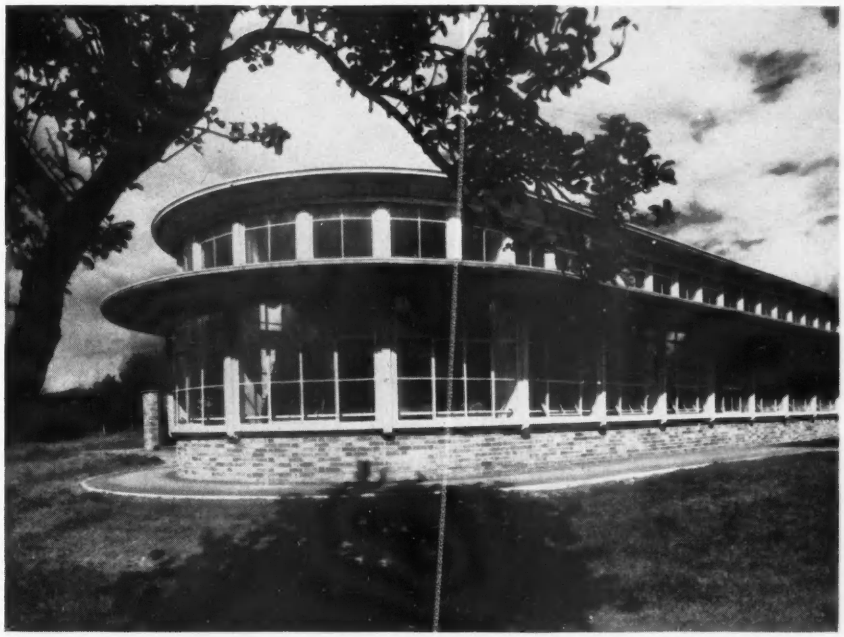
Structural engineer : S. WILLIS, MInst.CE. Clerk of Works : J. C. SPARKES

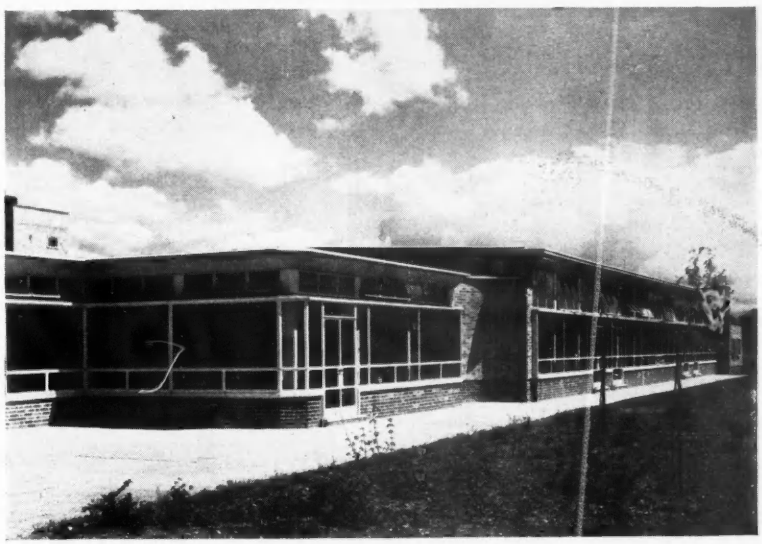
Builders :

SPICERS (BUILDERS), LTD.
(for Junior School, Kitchen and Dining-room.)

ESPLEY & CO., LTD.
(for Infants' School)





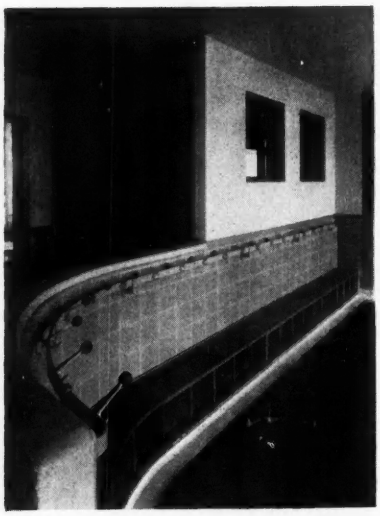


Above : View of the junior school block.

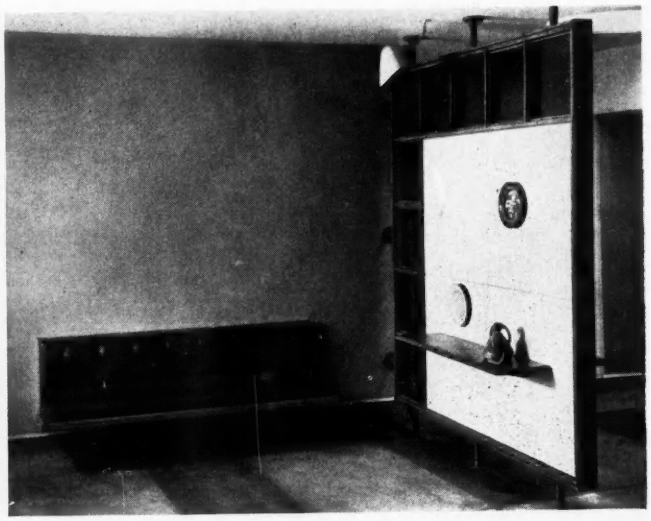
Left : The infants' classroom block.

Below : Interior of a junior classroom.

THIS school, built in three phases extending from 1950 to 1953, accommodates 600 children. It is sited on high ground overlooking Worcester. Trees from an old orchard have been retained around the school which comprises infants' and junior departments, planned as two parallel wings of classrooms facing south-east and connected by the assembly and entrance halls of both schools which, in return, lead to a joint dining-room and kitchen. Classrooms are so arranged on the site that they face green areas and are insulated from the principal playground by cloakroom and lavatory accommodation. Construction is traditional,

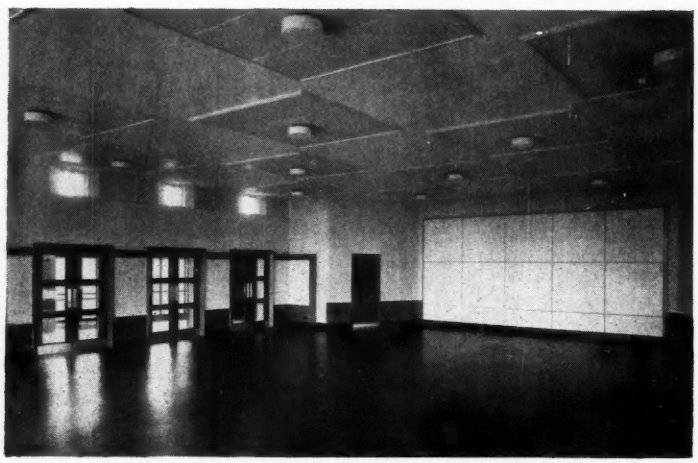


Detail of cloaks (infants' school).



Detail of panel and seat (infants' entrance hall).

Common dining-room.



Infants' assembly hall.

the larger units being steel framed with floors and roofs of reinforced concrete, and the smaller ones of solid construction. The frames to the windows and the trimmings to the edges of the roof slabs are of reconstructed Clipsham stone.

Internally, finishes are chosen to reduce maintenance work, floors being in composition blocks in classrooms, dining-room and assembly halls, with terrazzo in the cloakrooms and lavatories. Tiling has been used wherever possible on wall surfaces subject to heavy wear. Special attention has been paid to the acoustics in the school, particularly by including areas of absorbent tiling in teaching rooms and the dining-room. Heating is by under-floor panels throughout. Fully automatic, the installation is controlled by both the outside weather conditions and a time control which shuts down the apparatus at night and at the week-ends. Boilers are fired automatically by worm-type stokers placed beneath the boiler-house floor. The temperature of hot-water supply is maintained by calorifiers during the season when the school is heated, and by a gas boiler in the summer. The controls are again automatic. The planting around the school (by Mr. D. N. D. Hoddy) has employed mainly shrubs for immediate effect and some groups of trees for the ultimate completion of the setting.

RONKSWOOD SCHOOL, WORCESTER

Entrance halls of infants (above) and junior school (below).

Sub-contractors and suppliers were :—

Himley Brick Co. and Proctor and Lavender, facing bricks ; The Adamite Company, flush doors ; Constone, Ltd., reconstructed stonework, precast concrete beams ; Ruberoid, Ltd., felt roofing ; Expanded Metal Co., false ceilings ; William E. Farrer, Ltd., sanitary goods ; James Gibbons, Ltd., ironmongery ; John Gibbs, Ltd., metal windows ; Abell and Smith, Ltd., electrical installation ; Granwood Flooring Co., composition floors ; Brady and Co., Ltd., roller shutters ; Hill and Smith, Ltd., entrance gates ; G. N. Haden and Sons, Ltd., heating and ventilation installation ; Henry Hope and Sons, Ltd., lantern lights ; La Brea Asphalte Co., asphalt tanking ; Venetian Flooring Co., terrazzo flooring ; Midland Wallboards, Ltd. and H. W. Cullum, Ltd., acoustic tiling ; Pilkingtons, Ltd., domelights ; Jones and Sturdy, Ltd., wall tiling ; Venetian Flooring Co., Ltd., cork tiling ; West Midlands Gas Board, gas installation, and Stourbridge Glazed Brick Co., w.c. partitions.

South elevation, showing entrance to boiler-house. Below : East elevation.

WAREHOUSE AT PADDOCK WOOD FOR HOPS MARKETING BOARD

Architects
FAIRTLOUGH & MORRIS

Assistant-in-Charge
J. M. RAMSAY, ARIBA

Clerk of Works
A. A. LACEY

Builders
HALSE & SONS, LTD.

DESIGNED specially for the storage of hops and intended partly to replace storage capacity in London lost through bombing, this warehouse is of five-storeys with a net storage area of 130,000 sq. ft., giving sufficient capacity for approximately 25,000 "pockets," allowing for working space. Planned to handle rail and road traffic inward and outward from the loading platform on the north side, the whole of the ground floor is at platform height.

Vertical distribution is carried out by means of three electrically-operated continuous sling-type hop hoists evenly spaced along the building, beside each of which is an inspection bay, used for sampling, having windows for the full height of the building. Each hoist is capable of handling 200 pockets per hour. Offices, mess room and lavatories, etc., are at the west end of the building on the ground floor. The layout of the building provides for refrigeration and mechanical ventilation in certain sections if required in the future. Heating to offices and hot water is supplied from an oil-fired boiler in the basement of the building.

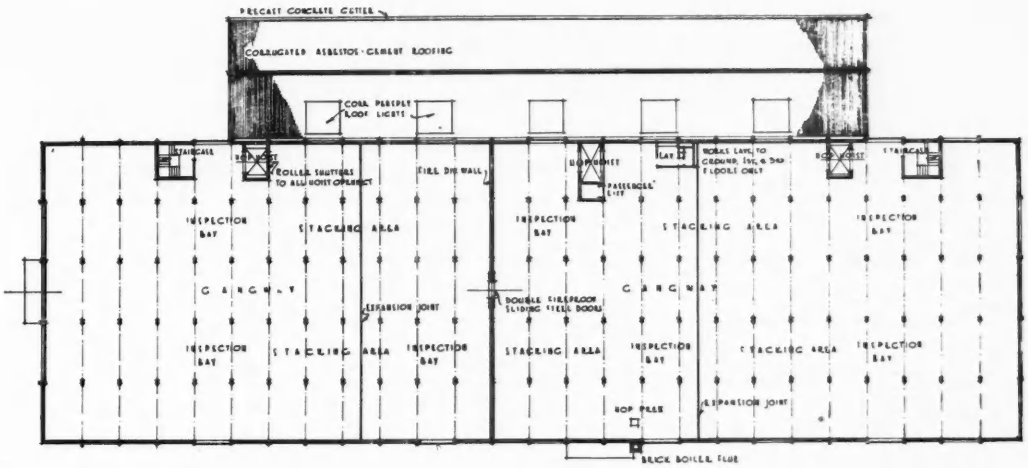
CONSTRUCTION : The units forming the r.c. frame were cast on the ground in horizontal moulds for ultimate assembly by means of bolts and grouting to form a rigid structure. The floor slabs form a structural tie between

precast frames, and the comparatively light loading involved (56 lb. per sq. ft.) has enabled the slab thickness to be kept down to 4 in. External wall panels are of cavity construction with sand lime facing bricks and an inner skin of lightweight concrete blocks. The roof covering, of aluminium channelled decking covered with insulating board and bituminous felt, discharges through internal gutters into a concealed external gutter incorporated in the top frame member. Timber scarcity at the time of designing the building resulted in the selection of $\frac{5}{8}$-in. "Weyroc" chipboard for the floor finish, tests of which have shown excellent resistance to wear.

This contract lent itself to programming and progressing in great detail in that there were few divergencies from the standard bay of the warehouse, of which there are 26 in number. It is this repetition which made the use of a precast frame such a suitable solution. A total of 1,435 precast on-site units, with a weight of approximately 1,200 tons, were erected on the site, using a 10-ton Scotch derrick which lifted units from their beds, stacked and erected them. Erection occupied 36 weeks. The hoisting and erecting of the 12 in. by 8 in. by 45 ft. long columns was done by using a steel "strongback." Three 1 in. dia. bolts were cast into the columns in positions calculated to avoid overstressing at any stage in handling. The strongback, which weighed one ton and was purpose-made, was lowered onto the bolts and used in its horizontal position with twin straps to lift the column off its bed. This was done when the column was not less than three days old. Cube strengths of 4,000 lb. per sq. in. were normal at three days for the 1 : $1\frac{1}{2}$: 3 concrete.

The west elevation.

With very few exceptions the concrete members were accurate in distance between bolt holes to a tolerance of plus or minus $\frac{1}{8}$ in. This was only obtained by close and continuous detailed supervision. All joints and nail holes in shutters were filled and the



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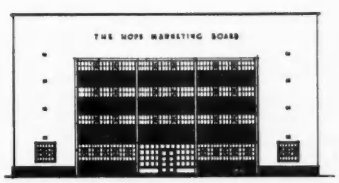
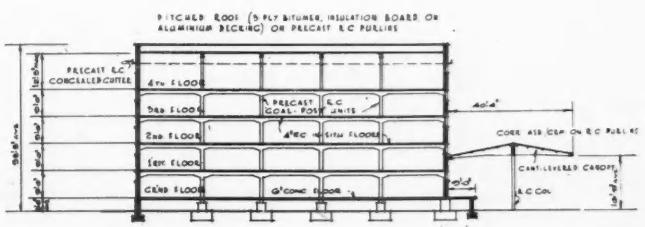
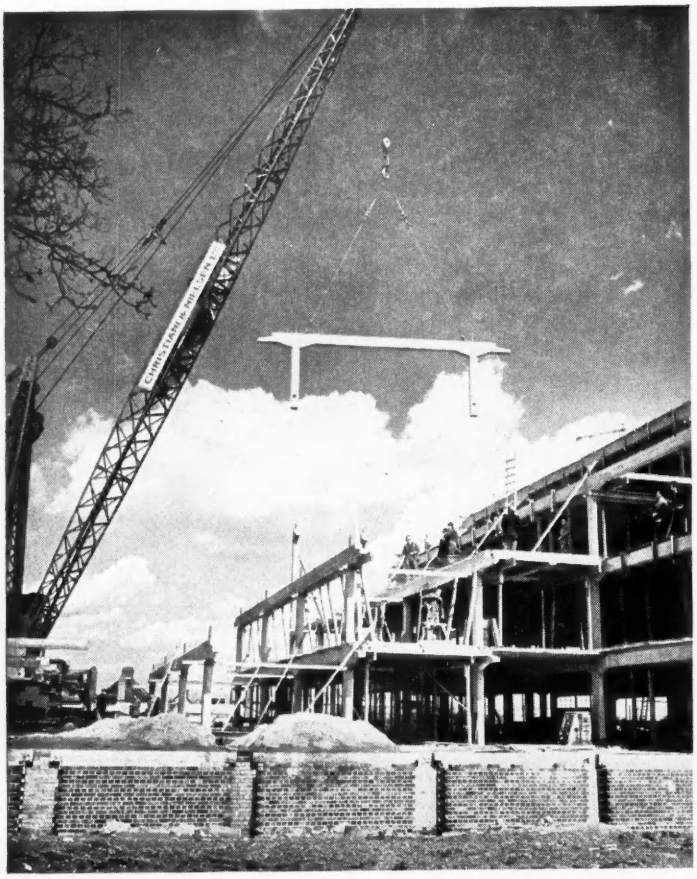


WEST ELEVATION



TYPICAL CROSS SECTION



Hoisting r.c. members into position. Below : Progress view.

shutter painted with two coats of a special varnish, an effective protection which lasted in cases for as many as 50 uses of one shutter. For the more complicated " goalpost " units, of which there were 200, nine beds were made, resulting in 22 uses.

COSTS : The contract price for the building was £191,979, including all external work with the exception of the railway siding, giving a figure of 29s. 6d. per sq. ft. of productive floor space. Work was started on the site in August, 1953, and part of the building was ready to receive hops at the beginning of September, 1954, being completed at the end of October, representing a building time of 15 months. R.C. work was designed by R. E. Eagan, Ltd., of 1 Ashley-place, SW1, and cast and erected by Christiani and Nielsen, Ltd., of Romney House, SW1.

Specialist subcontractors and suppliers were : *Roofing*, William Briggs and Sons, Ltd. ; *flooring* (*Weyroc*), The Airscrew Company and Jicwood, Ltd. ; *sand lime facing bricks*, Sevenoaks Brick Works, Ltd. ; *concrete blocks*, Lignacite, Ltd. ; *electrical installation and loudspeaker system*, Williamson's Electrical Co., Ltd. ; *inspection windows* (*Glascrete*), J. A. King and Co., Ltd. ; *patent roof glazing*, Guildford Glass and Metal Works, Ltd. ; *heating*, Norris Warming Co., Ltd. ; *hop hoists*, Rownson, Drew and Clydesdale, Ltd. ; *lift*, Marryat and Scott, Ltd. ; *large baling press*, Edwin Mills and Son, Ltd. ; *small baling press*, W. Weeks and Son, Ltd. ; *roller shutters*, Haskins Rolling Shutters ; *fire doors and external shutters*, Fireproof Shutter and Door Co., Ltd.

Metal windows, Rustproof Metal Window Co., Ltd. ; *painting*, H. and C. Decorations, Ltd. ; *ironmongery and architectural lettering*, Yannedis and Co., Ltd. ; *terrazzo tiling*, Jaconello, Ltd. ; *vitreous rainwater pipes*, Vitreflex, Ltd. ; *office metal partitioning*, Sankey Sheldon, Ltd. ; *sanitary fittings*, W. N. Froy and Son, Ltd. ; *lavatory partitions*, Rowe Bros., Ltd. ; *railway siding*, William Jones, Ltd. ; *fencing*, Penfold Fencing and Engineering, Ltd. ; *stacker*, Kenton Equipment, Ltd. ; *scales and trucks*, Doyle and Son ; *fire extinguishers*, Geo. Angus and Co., Ltd. ; *sampling tables and desks*, Robert H. Hall and Co. (Kent), Ltd. ; and *locomotive*, Geo. Cohen, Sons and Co., Ltd.

WAREHOUSE AT PADDOCK WOOD FOR HOPS MARKETING BOARD

Notes of the Week

PIECEMEAL CITY DEVELOPMENT

WE have frequently drawn attention* to the need for clear thinking with reference to the many problems involved in the replanning of London, and to the basic virtues of the comprehensive plans prepared by Abercrombie for the County of London and Greater London, and by Holden and Holford for the City. A letter in *The Times* of January 7 prompts a return to the subject; under the heading "New Barbican" the issue is raised that the Improvement and Town Planning Committee of the Court of Common Council of the City, in rejecting the comprehensive scheme put forward by the New Barbican Committee, expressed a policy in favour of piecemeal development.

Entirely without prejudice to the scheme put forward, its designation as "comprehensive" merits careful consideration. It is true that the area which the proposed scheme would cover is considerable, but it is only a fraction of the City and must therefore be considered in relation to the plan for the City as a whole, which again must form part of the plan for the County, the core of the Greater London Plan. For example, it may be that, as stated, the scheme "provides car parking on a scale economically and physically impossible elsewhere in London, except the royal parks"; but those cars have got to get to and from the site, and the more there are of them the greater the strain on the roads in an area of which the Minister of Transport recently said (*The Times* 10.11.1954) "quite a small addition to the volume of traffic in London might bring it to a standstill."

Again, the scheme includes a 27-storey building in the neighbourhood of St. Paul's (*si monumentum requiris, circumspice*) which raises questions of both æsthetics and "London Pride." These are but two examples which point to the fact that the promoters of no scheme, whatever its merits when considered in isolation, can expect the Planning Authority to confine its consideration to those merits. Some reports indicate muddled thinking on the part of some members of the Court of Common Council. However, the London County Council is responsible for the development plan, now awaiting the approval of the Minister of Housing and Local Government who is the ultimate authority responsible for seeing that the plans and programmes of the city, county and the planning authorities in Greater London form a coherent whole.

This case emphasises the importance of co-ordinating the programmes of the various authorities with reference to the public works necessary to implement their plans. For example, imagination balks at the degree of traffic congestion that would be produced were the Barbican scheme, with its multitude of offices and spacious car parks, to be erected and occupied before the street works necessary to cope with the traffic thereby engendered had been carried out. This is not a criticism of the scheme looked at in isolation—it merely emphasises that it cannot be so regarded.

* Confused Thinking (*The Builder*, 13:3:1953); Whither London (19:6:1953) and Skyscrapers for London? (22:10:1954).

CRAFTS CENTRE EXHIBITION

THE CRAFTS CENTRE'S exhibitions at Hay Hill are always a valuable means of relating the hand-made product to its quantity-produced counterpart, ranging successively over a field in which one is apt to forget the existence of standards which ought more regularly to be applied to the commercial product, writes Basil Marriott. The comparison is not always detrimental to the latter—as for instance in book production, though it must be remembered that typography has for long been about the most successful "translation" of hand methods into terms of mechanical reproduction; even here, the outsides of modern books sometimes leave much to be desired:

The fields in which this relationship can be drawn are shrinking, and it cannot be easy to ring the changes of subject for presentation at the Crafts Centre. Its present exhibition—of Decorated Glass, and Books, until February 12—is a welcome change, and moreover there are practical advantages in the revival of the art of glass engraving, and in the availability of binding craftsmen for books and archives which are to outlast our paper-backed currency, literally speaking. A monogrammed drinking-vessel, for instance, sets a personal seal on a very personal possession, and few others are as satisfying as a well-bound and well-loved classic.

LETTERING AS DECORATION

IN THE former field the work of seven craftsmen is on show. I thought David Peace's use of lettering as a decoration particularly apt to the material, the quill-forms of cursive script actually gaining by the slightly "chippier" line called for, but the process is so congenial to the medium that few pieces failed to please except where they became over-elaborate and pictorial. Rather a preponderance of mugs was at least realistic, with the modification of our drinking habits through both Custom and Excise, though a magnificent quart (?) pot by Ernest Dinkel suggested no decline in them!

Lettering again seemed to me the best as well as most appropriate book decoration. I liked William Matthews' and James Taylor's exploitation of gold rather in the manner of the illuminator, whose modern counterpart's work was on show in the form of calligraphy, together with wood engravings, by John Farleigh and others to give context, and content, to the binder's craft.

COMING EVENTS

MONDAY, JANUARY 17.

PLANNING CENTRE.—"Planning Position in India," by Professor W. A. Robson, 28, King-street, WC2. 6.30 p.m.

TUESDAY, JANUARY 18.

RICS.—"Development Plans: Objects and Objections," by Mr. Michael Rowe, CBE, QC, 12, Great George-street, SW1. 5.30 p.m.

LMBA.—Luncheon at which Mr. Nigel Birch, Minister of Works, will be present. Park Lane Hotel, Piccadilly, W1. 1 p.m.

MINISTRY OF WORKS.—"Contract Organisation in Relation to Use of Mechanical Plant," by Mr. N. S. Pippard. Brixton School of Building, SW4. 7 p.m.

HOUSING CENTRE.—"The House and Housework," by Mr. R. G. Bateson. 13, Suffolk-street, SW1. 1.15 p.m.

INSTITUTE OF BRITISH DECORATORS AND INTERIOR DESIGNERS.—"Glass Panelled Walls and Screens," by Mr. Edward Elton. Building Centre, Store-street, WC1. 6.30 p.m.

WEDNESDAY, JANUARY 19.

VICTORIA AND ALBERT MUSEUM.—"English Mediaeval Stained Glass," by Mr. Alec Clifton-Taylor. V and A, South Kensington, SW7. 6.15 p.m.

THURSDAY, JANUARY 20.

ARCHITECTURAL ASSOCIATION.—Forum on "Car Parks Under London Squares." 34, Bedford-square, WC1.

LONDON SOCIETY.—Public meeting on Car Parking in Central London under chairmanship of Sir Alfred Bossom, MP. RICS, Great George-st., Westminster. 5.30 p.m.

INSTITUTE OF FUEL.—Discussion on "The Beaver Report." Institution of Civil Engineers, Great George-street, SW1. 5.30 p.m.

FRIDAY, JANUARY 21.

SOUTHERN COUNTIES FEDERATION OF BUILDING TRADES EMPLOYERS.—Luncheon following annual general meeting. Connaught Rooms, WC2. 1.15 p.m.

AIRLINE OFFICES.—These converted offices have been designed for Trans-Canada Airlines and are situated on the third floor of Wallis House, St. Enoch-square, Glasgow. By using low brick screen walls and removable ash screens, the floor area is divided into units without diminishing the overall size of the original room. Bright contrasting colours have been used throughout. The ceilings are black with scarlet or white acoustic tiles arranged in a chequer pattern. The architect was Kenneth Dod, MInstRA, and the contractors, R. and F. Daw, Ltd.

CORRESPONDENCE

BLOMFIELD ON HAWKSMOOR

To the Editor of *The Builder*

SIR,—Many of your readers must have read with interest and pleasure, as I did, Mr. Ferriday's tribute in your last issue to Mr. Goodhart-Rendel as a great critic of architecture. Your contributor deserves thanks for expressing so aptly and gracefully in print what most students of architectural criticism have been thinking and saying privately for years past. I feel, however, that he has been a litle unfair to Blomfield, particularly with reference to Hawksmoor. His statement that "Blomfield considered Hawksmoor no more than a competent clerk who in later life designed a few original but inferior churches" is not borne out by a re-reading of the second volume of Blomfield's great, if opinionated, "History."

It is true that he examines Hawksmoor's works critically, but he calls the man himself "a well-trained architect" (p. 202). Christ Church, Spitalfields, he describes as "in some ways one of the most original churches in London," its steeple as, next to St. Bride's and St. Mary-le-Bow, "probably the finest and most original Renaissance steeple in England" (p. 204). "The quality of his imagination was ungraceful and ponderous," he writes (p. 208), "yet Hawksmoor was an original designer, and he seriously grappled with the problems of architecture instead of merely copying Palladio and the accepted Italian models."

There are other favourable judgments but I will not take up more of your valuable space by quoting them. So far from regarding Hawksmoor as "no more than a competent clerk" it is clear that Blomfield ranked him higher than some contemporary and later architects whose names are more prominent in the records.

G. J. H.

RETENTION MONEYS ON BUILDING CONTRACTS

To the Editor of *The Builder*

SIR,—Mr. E. C. Fish's very useful contribution in your issue of December 17 will, I have no doubt, be welcomed by many, particularly by those who have given serious thought to these problems. His suggestions raise, however, large issues which are constantly shirked through timidity or through preoccupation with sectional advantages.

The Working Party reported to the Minister of Works, who has described it as Inter-Departmental. Its signatories are, nevertheless, drawn with one exception from his own Ministry, and it is not clear whether and to what extent other Departments will consent to any amendments to CCC/Works/1 based upon its recommendations. Can the Ministry of Housing be persuaded to urge local authorities to adopt the same practice?

Probably, however, the majority of local authorities use the RIBA Form of Contract. Over the terms of this document the Minister has no control, any more than large sections of the industry. What notice will be taken of the Working Party's recommendations by the Joint Contracts Tribunal? Apart from the disadvantages inherent in the existence of two principal forms of main contract—CCC/Works/1 and the RIBA Form—additional difficulties have been and are being caused as other forms are produced to meet the requirements of those building owners and sections of the industry who are without a voice in the drafting of either document. If a halt is to be called and the cause of standardisation of contractual documents is not to founder on the despair of those left unconsulted—viz., the majority of the industry—someone must assume the responsibility of insisting that all interests continue to produce basic contractual documents that can, with suitable recognised variations, be used in all circumstances. In the preparation of such documents, Mr. Fish's suggestions will fall into place.

In my view, only the Minister to whom falls a primary responsibility for the industry can take such initiative, and I do not discount the opposition he would encounter from sectional interests. I believe such an initiative would be welcomed by a majority of those professionally or commercially interested in building even if not necessarily by their representative organisations. The Simon Report of 1944 was, however, almost as big and as contentious an undertaking. Must we wait for another war before the next step can be taken?

FRANK WOODCOCK.

82, Victoria-street, SW1.

FIRM PRICES

To the Editor of *The Builder*

SIR,—I have been instructed to inform you that, in accordance with the unanimous resolution passed by my Council, members have been recommended that, wherever possible, their quotations should be firm, subject to acceptance within thirty days and for delivery within six months, and subject also to any nationally negotiated wages variations. Otherwise they would also be subject to variation on the basis price of softwood at £*x* per standard and hardwood at *x*s. per cu. ft.

Whilst we cannot bind our members to adopt this resolution passed by my Council, it is thought that most of them will follow the lead, as they were consulted before the Council confirmed its decision.

R. G. HARVEY GREENHAM, Secretary,
The English Joinery Manufacturers' Association,
Sackville House, 40, Piccadilly, W1.

A BROOK GREEN BUILDING

To the Editor of *The Builder*

SIR,—In "Notes of the Week" (your issue of December 3, p. 893), under the sub-title of "Hammersmith School," the question is asked whether any reader might happen to know the exact site of the School of Building and Arts and Crafts in Dunsany-road, Brook Green.

I do not know, but I would draw attention to a block which stands at the corner of Dunsany-road and Haarlem-road which, until recently converted into flats and known as Brook Green Studios, had been used as studios and had obviously been specially designed as such or as ateliers somewhere between 1880 and 1890. The block is three-storeyed, with an attic, and on each floor there were at least two very large rooms with north-light windows. For a while one of the ground-floor studios served as a gymnasium to the "prep." school that adjoined at the corner of Dunsany-road and Brook Green and now also converted into flats. I was allowed the tenancy of one of the first-floor studios myself before the war, because my wife was an artist.

There does not appear to be any other building in Dunsany-road which would have any pretensions to an educational history of the type referred to in your article or new enough to have been its successor. All the buildings in this street were erected about this period. I trust this information may be of assistance in completing the link between Francis Hawkes' house and Lime Grove.

EDWIN WILLIAMS [MBE, FRIBA]
98, Brook Green, W6.

FOREMEN AND CLERKS OF WORKS

To the Editor of *The Builder*

SIR,—I am delighted this year to have the privilege of making the annual appeal on behalf of the Provident Institution of Builders' Foremen and Clerks of Works.

Founded in 1842 the Institution has a long and distinguished record of benevolent help given to builders' foremen and clerks of works. Permanent pensions to the aged and infirm, temporary assistance in times of special need, aid to widows and maintenance of orphaned children are the special responsibilities of the Institution, and in view of the present high and rising cost of living the needs of those dependent upon the Institution are greater than ever.

I am sure that I may count upon your readers' generosity to assist in the evening of their days those who in the past have played an important part in sustaining a great industry to which we are all proud to belong.

Such kind donations will be very gladly received by myself at the address below, or by the Institution's Financial Secretary, W. Sutherst, 43, Maxwell-road, Welling, Kent. Cheques should be made payable to the Provident Institution of Builders' Foremen and Clerks of Works.

D. E. WOODBINE PARISH.

11, Buckingham Palace-gardens, SW1.

News of the Week

RESTORATIONS IN BATH

BATH City Council, on January 4, agreed to set aside the proceeds of a penny rate, estimated at £2,700 during the coming financial year, towards the renovation of some of its Georgian buildings on the understanding that the Historic Buildings Council recommended the Minister of Works to make a grant of at least twice this sum.

Alderman A. W. S. Berry, chairman of the City Planning Committee, said that there were roughly 2,000 scheduled properties, and as they were between 200 and 250 years old, many were getting into a very bad state. The economic position prevented many owners from doing anything to the exteriors. The Historic Buildings Council had a sum of money set aside for the upkeep of such premises.

Only groups of buildings could be dealt with through the city council, and individual owners would have to ask for a grant themselves. Groups of buildings which would come under consideration would be Royal-crescent, Lansdown-crescent, the Circus, and Pierrepont-street.

It is understood that an advisory committee is to be set up, consisting of four members of the city council, two of the Bath Preservation Trust, two of the Historic Buildings Council, and two independent members.

NEW YEAR HONOURS

IN addition to those noted in our last issue, the following have been the recipients of New Year's Honours: S. W. C. Phillips, under-secretary, Ministry of Housing and Local Government (CB); F. Charles Saxon, MC, V-PRIBA (OBE); and Michael G. F. Ventris, ARIBA (OBE).

HELPING FOREMEN

THE OPPORTUNITY which annually presents itself to architects and constructors to repay something of the debt which they owe to the wise and effective help given by every competent foreman and clerk of works is now here. We are sure that the appeal for the Provident Institution of Builders' Foremen and Clerks of Works, eloquently made on another page by Mr. David Woodbine Parish, this year's President, will be supported as it deserves. How appropriate if this year's list should prove a record!

BUILDING WAGES

THE National Joint Council for the Building Industry at its meeting yesterday (January 13) was expected to approve automatically an increase of ½d. in hourly rates on account of the rise in the cost-of-living index in the past year. This increase will take effect from February 7, i.e., the end of the first full working week in that month. The NJC also had before them the operatives' claim for an increase in wages of 4d. an hour.

EASING HOUSEWORK

AT a lunch-time meeting at the Housing Centre, London, on January 18, Mr. R. G. Bateson, of the Building Operations Research Unit, will describe a study which has recently been made on the house and housework.

An analysis of the usage of a typical small house plan was attempted by reproducing normal working conditions in such a house and inviting normal housewives to carry out their work under these conditions over a sensitised floor recording their movements. In conjunction with expert observations it was hoped in this way to obtain some useful evidence of the requirements of the ordinary housewife, and how far they are being met by a post-war council house.

IAAS LUNCHEON

THE London and Home Counties Branch of the Incorporated Association of Architects and Surveyors are holding the fifth members only luncheon at the Connaught Rooms, Great Queen-street, WC2, on January 21 at 1 p.m., to be followed by an open discussion. The luncheon will be under the chairmanship of Mr. F. J. Meekins, FIAS, FIArb., and the president of the association, Lt.-Col. A. E. Henson, FRIBA, will address the members. Those wishing to attend should write to the General Secretary, Mr. R. F. Isted, 75, Eaton-place, SW1.

INDUSTRIAL DEVELOPMENT

LAND amounting to about 11 acres at the Plumber's-row site, Stepney, is to be acquired for commercial and industrial redevelopment, according to a proposal made by the LCC town planning committee.

The site, which is situated to the east of Gardiner's-corner between two main traffic thoroughfares (Whitechapel-road and Commercial-road), is to be used for the re-establishment of firms displaced elsewhere by the LCC's and borough councils' developments.

The committee state that to permit the early comprehensive development of the site and to give adequate traffic facilities for the type of development envisaged, the present road system requires reorganisation and improvement, including the construction of a new road linking White Church-lane with Plumber's-row.

BURTON BOROUGH ARCHITECT

THE Council of Burton-upon-Trent County Borough have established a separate Borough Architect's Department, and have appointed Mr. W. Porter Mitchell, ARIBA, AMTPI, as Borough Architect.

ESSEX PLANNING ADVISER

MR. F. LONGSTRETH THOMPSON, OBE, FRICS, PPTPI, County Planning Adviser to Essex County Council, is to retire.

APPOINTMENTS

MR. MILES HUDSON, who was seconded from the Ministry of Housing and Local Government in March, 1952, to become general manager of the Coal Industry Housing Association, has accepted a full-time appointment with the National Coal Board as from January 1, last. In his new appointment, Mr. Hudson becomes consultant on housing and in the execution of work connected with building and civil engineering, while still retaining his present appointment as general manager of CIHA.

MR. T. A. LAWTON, at present deputy borough engineer and surveyor at Heston and Isleworth, has been appointed as borough engineer and surveyor as from January 1, 1956. The service of Mr. O. P. F. Hilton, the present engineer and surveyor, has been extended until the end of 1955.

PROFESSIONAL ANNOUNCEMENTS

MESSRS. HAROLD BULMER AND J. RICARDO PEARCE, AA.RIBA, of 44, High-street, Wimbledon, London, SW19, have opened a branch office at Adam's Hill, Breinton, nr. Hereford, where they will be pleased to receive trade catalogues, etc.

MESSRS. YEOMAN AND EDWARDS, chartered quantity surveyors, have moved their offices to 3, Chandos-street, Cavendish-square, W1. (Telephone: Langham 9031.)

MR. GEOFFREY F. SARJEANT, FRICS, FIAS, and MR. KENNETH G. S. STIMPSON, ARICS, chartered quantity surveyors, of 26, Park-la., Croydon, Surrey, have changed the style of their practice from Messrs. Geoffrey F. Sarjeant & Partner to MESSRS. SARJEANT, STIMPSON & PARTNERS.

FROM "THE BUILDER" OF 1855

Saturday, January 13, 1855

THE PRESENT POSITION OF ARCHITECTURE.—On whom rests the blame of the present languid and stagnant condition of the art? Does it not lie on the general public, whose apathy, whose want of taste and knowledge of the subject, and whose very requirements, naturally lead the architect still to tread in the old paths; and in them he will ever continue till forced by the same public to form, by dint of sheer labour and severe study, a new and worthier course.

Let them demand an indigenous style, which shall rise at once out of the peculiar circumstances of modern days. Let them demand edifices which shall *appear* the works of Britons of the nineteenth century, and not the compositions of Egyptians, of Greeks, of Middle Age architects, and of Moors, often-times in the last stage of their dotage. Let them do this, and they may confidently trust that architects will nobly respond to the call, will prove themselves equal to the crisis, and demonstrate that theirs is not the art which is fated for ever to stand still. [*From a correspondent.*]

COMPETITION NEWS

Housing for New Zealand

THE results have been announced from New Zealand of a permanent-house competition, sponsored by the NZ Ministry of Housing, the object of which was to explore methods of construction not previously in general use in that country.

Twenty-five entries were submitted and the judges were the Minister of Housing, Mr. Sullivan, Mr. W. E. Lavelle (NZ Institute of Architects), Mr. T. N. Dickson (NZ Master Builders' Federation), and Mr. L. E. Brooker (State Advances Corporation).

The winners are as follows:—First, equal—H. W. T. Eggers and D. B. Brown, Wellington; L. R. Gordon, Levin; NZ Pottery and Ceramics Research Association, Wellington. Second, equal—G. Rosenberg and Norman Dick, London; J. Bruce Wilson, assisted by G. W. Agar, J. T. Craig and B. W. Johns, Johnsonville.

The first-prize winners share £350, and therefore receive £116 13s. 4d. each. The second-prize winners receive £25 each.

OBITUARY

Sydney C. Jury, FRIBA

WE REGRET to record the death which occurred recently at Falmouth, of Mr. Sydney Charles Jury, FRIBA, former Bedfordshire County Architect. Mr. Jury retired in 1949 after 30 years' service with Bedfordshire County Council. He was a founder-member of the county architects' society, and served on its executive committee.

SALARIED ARCHITECTS

RIBA Not to Sponsor a New Trade Union Organisation

THE Council of the RIBA, after further consideration of the question of representation of members and students in salaried employment for the purpose of negotiations on conditions of service and salary, which was the subject of a questionnaire (and later report in May, 1954*), have now finally decided:

(a) That the Royal Institute shall not sponsor a new organisation of a trade union nature;

(b) That no one existing organisation shall be singled out for preferential support;

(c) That members in salaried employment be advised that their interests will be best served by joining an existing organisation appropriate to their particular field of employment; and

(d) That the Royal Institute will proceed actively to explore alternative means of attaining the agreed objectives of improving and strengthening the conditions of employment of salaried architects in all classes of employment.

Having this last resolution in mind, it is the intention of the Council to review the functions of the department of the Royal Institute which serves salaried members in official positions and in private offices to ascertain:

(1) In what direction further effort might be practicable and of benefit to salaried members generally; and

(2) How co-operation and liaison with the various negotiating bodies may be strengthened and improved.

The Council have entrusted this review to the Salaried and Official Architects' Committee. The results will be reported to members in due course.

THE BACKGROUND

This decision is contained in a letter sent to all RIBA members, which also embodies the Council's observations. On the background to events, it will be appreciated (the letter says) that the Council have at all times been actively concerned with the welfare of salaried members, and in 1928 a standing committee for that purpose was set up. That committee was subsequently given representation on the Council. Much of the policy accepted to-day is due to the efforts of that committee and the Council. The generally accepted principles that departments of public authorities responsible for architectural work should be under the separate control of an architect and that the professional status of a salaried member is in no way different from that of a private practitioner are two important examples. In 1946, a senior member was added to the staff of the RIBA for the special purpose of advising on questions of status and salary for those in salaried employment and for maintaining a general liaison in regard to these matters with the secretariats of the leading organisations representing employees of all professions. The RIBA, of course, is already consulted from time to time in connection with the periodic review of the grading and remuneration of architects in central and local government service and some statutory undertakings.

THE 1954 QUESTIONNAIRE

The summary mentioned above referred to the study which the Council had been giving to this matter, and attached to it was a questionnaire form designed to enable the Council to assess with some accuracy the extent of the demand for additional machinery for the representation of salaried architects. An analysis of the replies was carried out by expert statisticians and a summary was published in the RIBA *Journal* for May, 1954.

Approximately half the total membership replied, and of these roughly two-thirds expressed themselves as in favour of some further machinery, though from comments added to the forms it appeared that a number of members were still under some misapprehension: they thought that the RIBA itself could assume the rôle of a negotiating body on full trade union lines and obtain recognition for negotiating purposes from the various joint councils, committees and employing authorities. Members are reminded that, as pointed out in the summary, this would not be possible under the terms of the Royal Charters, nor would the RIBA be likely to obtain full formal recognition from those organisations.

Of those replying, 63 per cent., made up of 26.1 per cent. who were already members of an existing trade union body and 36.9 per cent. who were not, expressed themselves as willing to join a new one if set up, while 37 per cent., whether already members or not, expressed themselves as against a trade union in principle. At the same time, the statisticians warned the Council of the need for caution in extending any interpetation on these lines to the 50 per cent. of the total membership who did not reply to the questionnaire. On the evidence before them, the Council decided that there were grounds for further investigation, though there was some doubt in their minds as to the degree of support that might ultimately be forthcoming if any new organisation were to be set up. It was their opinion that in the complex field of negotiations of conditions of service and salaries any organisations which already enjoyed a measure of recognition and had a trained staff and experience of the work would have great advantages over any newly created body.

They accordingly arranged as a first step for discussions to be held with representatives of the Association of Building Technicians. The object of these discussions was to see whether the organisation of that body might be so modified that it would become exclusively representative of architects, and at the same time become recognised as the appropriate representative body of the profession for all negotiating purposes. Full and friendly discussions were held between representatives of both sides. While the RIBA requirements as to exclusive membership could possibly be met in the course of time, there appeared to be little prospect of the ABT achieving in future any more substantial recognition in the established negotiating machinery than it had been able to obtain in the past 25 years.

The prospects of any new body to be set up would be far worse as it would start without the advantages of the ABT's experience and organisation, states the letter to members, which adds: Under existing conditions, the influence of any negotiating body is broadly proportional to its numerical strength. A union exclusive to architects would be too weak numerically to compete with the existing and well-established multilateral organisations, such as the National and Local Government Officers' Association and the Institution of Professional Civil Servants. Not only must these organisations be expected strongly to oppose any attempt to take over the functions they now exercise in representing their architect members, but it is unlikely that any representation on negotiating councils would be conceded by either the employers' or the staffs' side for fear of creating a precedent to be followed by other professions with the consequence that such councils would become unwieldy in numbers.

THE COUNCIL'S DECISIONS

It thus became clear that, as far as architects not employed in private practice are concerned, their interests would be better served by organisations having the combined strength of many professions, provided that every opportunity was taken to ensure that the status of architects was adequately maintained, and by endeavouring to secure effective and regular consultation between the RIBA and the organisations concerned in all negotiations which involve other professions.

* *The Builder*, May 14, 1954.

"PUBLIC CORPORATION FOR BUILDING"

National President's Reply

MR. G. W. GROSVENOR, National President, speaking at a dinner of the Eastern Federation of Building Trades Employers, at Cambridge, on January 6, said:

"I am surprised that at the end of a year during which the building industry has broken all post-war records, the author of a recently issued pamphlet should advocate a return to central planning with controls, including licensing and also the setting-up of the type of Public Corporation which the Labour Government considered to be impracticable. I can only think that the author wishes to reintroduce a system, which the Working Party regarded with disfavour, because he shares our view that private enterprise is best!"

HOUSING PROGRESS REPORT

Figures for November

THE HOUSING SUMMARY presented to Parliament as a White Paper * jointly by the Minister of Housing and Local Government and the Secretary of State for Scotland shows that the number of permanent houses completed in Great Britain during November was 29,315 compared with 29,380 November, 1953.

In the first 11 months of 1954, 316,643 permanent houses were completed compared with 285,274 in the same period of 1953.

* Cmd. 9350 Housing Summary, November 30, 1954. HMSO, price 2d.

Products, Dimensions and Modules

A PAPER GIVEN TO THE MODULAR SOCIETY

INVESTIGATIONS being conducted by the British Standards Institution into the suitability of modular co-ordination as a basis for future building standards, were described by MR. BRUCE MARTIN, ARIBA, in a paper to the Modular Society on January 5. Following is a full acount of his remarks. Mr. Martin said:—

Building standards. — There are now 380 building standards which include 60 dealing with builders' plant and equipment, 70 with glossaries, drawing office equipment and technical considerations and the remaining 250 with building material. An early examination of the building material standards showed that they cover not less than 18,000 products and that the relations between these products could not be studied methodically unless some simple pattern was devised which would show their position in the general process of building. This pattern is what we now call the "table for the co-ordination of building material." My next remarks relate to this table.

Materials.—The materials used in the construction of a building undergo a series of processes which may be considered as a sequence of separate stages; in the first instance raw materials are obtained, selected and refined, and the refined materials are taken to the building site or to a large number of different factories.

GROUPING OF PRODUCTS

In the primary group of factories the refined materials are processed to produce simple cross-sectional forms. The processing is usually a continuous operation and it is in these factories that the rolled sections, bars, tubes, cables and sheets are made. These sections are then available to the builder on the site or may be sent to a secondary group of factories. Sections are not used solely in building and it should be noted that they have general application in many other industries.

In the secondary group of factories, materials and sections are used to produce simple building products which are characterised by small dimensions, simple forms and limited use. They are called "units" and include bricks, blocks, tiles, slates, fastenings, pipes and their fittings.

In the remaining group of factories, materials, sections and units are used to produce a wide variety of complex products with definite functional characteristics: these are called "assemblies" and include the heating, sanitary, electrical and gas equipment, the furniture, doors, windows, panels and stairs.

Thus the refined material is converted into three groups of building products: sections, having small cross-sectional dimensions and long lengths, simple forms and a wide variety of use; units having small dimensions in three directions, simple forms and specific use in building; and assemblies having overall dimensions in the order of human scale, complexity of forms and specific use in building.

Functional components. — In combination, building products group themselves into a number of separate functional components: the foundations, structural frames, walls, roofs, services and finishes. These are independent functional systems of assembly and when a number of these are inter-related, they make a complete organism or system of building.

The systems of building are the many different possible arrangements of the functional components or elements.

Thus the complete building process is covered in a table of six vertical columns. On the left are the materials and on the right are the completed systems of building: the building process moves from left to right. Column 1 includes materials, refined materials and their associated production processes; column 2 sections from the large factories; columns 3 and 4 units and assemblies from subsequent factory processings; column 5 work carried out on the site and column 6 the building during its useful life until its eventual decay and downfall. The table constitutes the complete cycle in which every building is made, built, utilised and maintained. The cycle is continuous and the division into a number of stages is for the purpose of analysis and to provide a common basis for agreement and subsequent study.

PEOPLE INVOLVED

The people involved in this complete cycle take their places at different stages. Associated with column 1 are the landowners, the importers of a raw material and refinery personnel; with columns 2, 3 and 4 the operatives in a wide range of different factories: between these columns are those concerned with transport. Column 5, the site operations, involves builders, building contractors, sub-contractors, architects, engineers and surveyors; whilst with column 6 are associated the client and those interested in maintenance, finance and land use.

Meaning of dimensions of products.— With the completion of the table, it was then possible to begin with a methodical analysis of the dimensions of the products described in the existing building material standards and of those outside the standards. At this stage we had to give a meaning to the dimensions of a product and to distinguish between the actual or overall dimension, the nominal dimension, and the maximum and minimum dimensions. The *actual* dimensions of all products have been listed and it is found that each group of products in the table has definite dimensional characteristics.

Dimensions of sections. — In sections, the length is not usually defined and only the cross-section has determined dimensions. In the case of bars, tubes, sections and cables, the cross-sectional dimensions usually lie between 0 in. and 10 in., in sheets the thicknesses lie between 0 in. and 3 in. and widths between 20 in. and 80 in.

Dimensions of units. — Units are characterised by fixed dimensions in three directions which in the case of bricks, blocks, tiles and slates seldom exceed 18 in. Pipes seldom exceed 10 in. diameter with lengths lying between

TABLE FOR THE CO-ORDINATION OF BUILDING MATERIAL

1	2	3	4	5	6
Materials	**Sections**	**Units**	**Assemblies**	**Functional components**	**Systems of building**
METALS	BARS e.g. rod	BRICKS e.g. air wall	STRUCTURAL ASSEMBLIES e.g. frame door window stair panel	GROUND WORKS e.g. fencing paving	
STONES	TUBES e.g. conduit	BLOCKS e.g. floor wall	HEATING EQUIPMENT e.g. boiler cooker	FOUNDATIONS e.g. pile raft	
AGGREGATES	SECTIONS e.g. channel trim lath lumber	TILES e.g. roof floor	SANITARY EQUIPMENT e.g. tank bath	STRUCTURAL FRAMES e.g. shell skeleton	
LIMES PLASTERS CEMENTS	SHEETS e.g. slab board quilt panel sheet	SLATES e.g. roof	ELECTRICAL EQUIPMENT e.g. lamp switch	WALLS e.g. screen partition	
WOODS	WIRES AND WIRE CABLES e.g. cord conductor	PIPES AND PIPE FITTINGS e.g. drain rain water flue	GAS EQUIPMENT e.g. mantle meter	ROOFS e.g. pitch flat	
PIGMENTS OILS PAINTS		FASTENINGS e.g. nail screw hinge lock	FURNITURE AND FIRE EQUIPMENT e.g. kitchen office hydrant	SERVICES e.g. heating sanitary electrical gas	
ADHESIVES				FINISHES e.g. floor ceiling wall	
BITUMENS TARS ASPHALTS					

0 in. and 250 in. Fastenings are generally small and have few dimensions exceeding 10 in.

Dimensions of assemblies.—The structural assemblies include frames, doors, windows and panels and these rarely exceed 6 in. in thickness and 100 in. square. Service equipment and furniture dimensions are of the order of 20 in. to 80 in.

SHAPE CONSIDERATIONS

Dimensions and form.—While tabulating dimensions of products, we came to realise that our studies would have to take into account shape as well as size. In fact, the science of modular co-ordination concerns the effective joining of building products and will include the whole range of products, their form and shape, the way they fit one to another and the selected dimensional pattern that will make joining methods effective. Modular co-ordination depends ultimately not only on the size of the product and its dimensions but also on whether it fits and does its job. This does not mean that dimensions are insignificant, rather that the shape of the object and its relation to its neighbours are of first importance. The effective joining of traditional building units is their most notable characteristic, whilst newer products are equally distinguished by the complexity of their arrangement in any general system of assembly. To-day building products can seldom be simply joined or fitted into a wider pattern of building and consequently are, to a disturbing degree, ineffectual. For example, although large numbers of corrugated sheets exist having the same overall dimensions, their profiles are unrelated. Without effective building products there can be no efficient building, for organised and sequential building operations depend on the division of the building into articulate parts capable of being fully related to each other.

Dimensions of products. — The tabulations of dimensions of existing rectilinear products showed that in the range of 0 in. to 100 in. about 200 separate dimensions exist and several of these occur many hundreds of times. We were led, therefore, to study how these dimensions came to be attached to their respective products. This study is still under way and at this stage I will only mention the people to be consulted. The dimensions of building products would appear to be determined by anyone engaged in the building industry. Each member of the building team may influence the dimensions in the light of his own requirements.

The manufacturer is primarily concerned with the factory processes, the machinery involved and the nature of the material to be processed.

The builder is mainly concerned with ease of transport, stacking, handling and assembly.

The user's prime concern is the relationship of the product to his own size; the door handle and bath tap to fit his hand, the door and window to suit his overall dimensions, and the furniture and equipment closely related to his body.

The architect is concerned with the relation of the parts to the whole; the dimensions of the products in relation to the dimensions of the design.

SIMPLIFICATION

The simplification of building products is a selective process aimed at simplicity of design, reduction of unpopular types, elimination of unnecessary ones and creation of necessary variety. It is now generally agreed that simplification is a necessity for an efficient industry. If we apply this process to the dimensions of building products in industrial production, then we have to select dimensions by reducing the unpopular and little used, by eliminating the unnecessary and unused, and by creating a necessary and varied range for general use.

These selected dimensions become modules. They are the basis for any form of modular co-ordination and not only help the effective joining of the parts, but also facilitate the planning of the building.

Selection of modules by the architect.—When considering the design of a building and the parts to be used for its construction, the architect has, broadly speaking, three courses open to him.

First, he can design the parts specially for the job in hand, settle their dimensions and make arrangements for their subsequent manufacture. This generally involves lengthy correspondence and discussion between designers and manufacturers resulting in a long and expensive design period, which is repeated for each job.

Secondly, he can design the parts for a particular system of construction and relate them to certain selected dimensions used throughout the design. This is the method adopted in the case of many of the school programmes. It leads to standard parts and standard details which are common to a particular architect and the associated manufacturers. Within such a group, simplification is achieved, but it takes a long time and considerable effort to reach a fully satisfactory set of parts. For the architect, change is difficult to make and for the manufacturer the market is limited to those using the system. But the parts are common to many buildings; and compared with the first method there is a saving in time at every stage of the building process.

COMMON VOCABULARY

Thirdly, he can utilise parts that have already been designed and related to modular dimensions. To do this he must adopt pre-determined modules for his design. He must be ready to choose dimensions from a limited range of numbers instead of from all possible numbers. By so doing he will eliminate the need to design and dimension the parts, reduce the details of jointing to a few simple cases, be able to obtain the parts from a number of manufacturers, and speed up manufacturing, ordering, delivery and assembling. Furthermore, when other architects are prepared to choose their modules from the common range of numbers, the market for the products will increase, leading to more efficient production and an increasing variety of modular parts. As with language, the use of a common vocabulary will bring about its own fruitful development.

If the largest variety of products is to be used in different constructions and for different programmes then the various modules must be related to one another.

Relation of modules.—In the American A62 proposal for modular co-ordination there is a basic module and all dimensions are multiples of this module. All existing product dimensions are re-located to the nearest mark on the 4-in. scale, but there is no basis for selection of particular dimensions and only limited simplification is thereby achieved. Too many dimensional variations are possible and there is no assurance either that the selected sizes are properly related to particular products or that they are harmonically interrelated.

In the German standard building numbers the dimension 1 metre is chosen and all building numbers are factors of the metre. In both the German and American methods, a number or dimension has been selected and all dimensions based upon it; thus the dimensions are evenly spaced upon the range 0 in. to 100 in. and form an arithmetic series.

LE CORBUSIER'S "MODULOR"

By contrast the dimensional pattern of building products indicates a relatively large number of dimensions in the lower and progressively fewer in the upper range. This suggests a geometric series as a basis for relating the modular numbers. Le Corbusier's "Modulor" is, of course, a particular kind of geometric progression with a common ratio of 1.618; the Engineering Series, known as "Preferred Numbers" or Renard Series are also ranges of numbers having a common ratio. Since it may be desirable for the numbers to have a common factor as well as to be related by a common ratio, numbers that exist simultaneously in arithmetic and geometric progressions will require study.

At the same time, we must bear in mind the fundamental numerical relationships between the numbers since the building products related to these numbers will greatly affect the appearance of our buildings. These building parts will form the subject of our revised modular standards.

Within a modular number pattern there should be a full range of standards devoted exclusively to the complete description of particular building products. These products need to be designed to fulfil a clearly defined need, suitable for full production and stocked to be available on demand. There must be a clear division between a standard that determines the performance of an electric light and that which lays down a worthwhile design; whilst it is essential to have a "performance" standard there must also be a "product" standard. Such standard building products will be based on related modules to allow of optimum standardisation combined with the greatest variety of assembly methods. They will constitute a basic vocabulary of dependable products for building.

Future tasks. — This is necessarily an interim report, since it covers only the first year of the BSI studies. At the moment there are two main tasks in hand.

Phase I of the European Productivity Agency Project No. 174, Modular Co-ordination, is under way and the reports being prepared in 12 countries are to be submitted in May, 1955, and will cover building products, theoretical data, research programmes and practical applications.

Parallel with this project, the work of our research teams continues and is directed towards the immediate objective—the determination of a number pattern for building modules.

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SOCIETIES

RIBA

Notes from Council Minutes

THE following notes are taken from the minutes of the RIBA Council meeting held on January 4:—

The Royal Gold Medal, 1955.—The secretary reported that HM the Queen had been pleased to approve the recommendation of the Council that the Royal Gold Medal for the Promotion of Architecture in the year 1955 be awarded to Mr. John Murray Easton (F).

APPOINTMENTS.

RIBA Architecture Bronze Medal. RIBA Representative on Juries to Consider Awards.—The Indian Institute of Architects: Calcutta Chapter, Mr. Rustom H. Pastakia (F). The Norfolk and Norwich Association of Architects, Mr. W. K. Ferguson (A).

RIBA Architecture Bronze Medal. The *Northamptonshire, Bedfordshire and Huntingdonshire Association of Architects.*—Formal approval was given to the recommendation of the jury that the award of the RIBA Architecture Bronze Medal for the period of three years ending December 31, 1953, be made in favour of King's Heath Shopping Centre, Northampton, designed by Mr. J. Lewis Womersley (A).

Prizes and Studentships

THE following awards of prizes and studentships of the RIBA, additional to the list published last week, have been announced:

RIBA HENRY JARVIS STUDENTSHIP AT THE AA SCHOOL OF ARCHITECTURE, £50.—Ronald Arthur Diss (Student RIBA), Halstead, Essex.

RIBA HOWARD COLLS TRAVELLING STUDENTSHIP AT THE ARCHITECTURAL ASSOCIATION, £40.—Peter Gray Wentworth-Sheilds, London, SW1.

RIBA DONALDSON MEDAL AT THE BARTLETT SCHOOL OF ARCHITECTURE, UNIVERSITY OF LONDON.—Giles Henry Blomfield, BAArch(Lond) (Student RIBA), Hampstead, NW3.

The competition drawings (with the exception of those submitted in competition for the Alfred Bossom Research Fellowship, the RIBA Bronze and Silver Medals for students of schools of architecture recognised for exemption from the RIBA examinations, the Hunt Bursary, the Neale Bursary, the RIBA prize for art schools and technical institutions, and the Archibald Dawnay scholarships) are on exhibition at the RIBA, 66, Portland-place, W1, until February 2, between the hours of 10 a.m. and 7 p.m., Saturdays 10 a.m. and 5 p.m. (Sundays excluded.)

The President, Mr C. H. Aslin, CBE, will present the medals and prizes and will deliver an address to students at a general meeting to be held at 66, Portland-place on Tuesday, February 4, at 6.0 p.m., and a criticism will be given by Mr. Raymond C. Erith, FRIBA, of the work submitted.

The Intermediate Examination

IN THE RIBA Intermediate Examination, which was held last November, 491 candidates were examined, of whom 158 passed and 333 were relegated.

AA

Marley Tile Scholarship for the Study of South American Architecture

THE Marley Tile Co., Ltd., offer a travelling scholarship of £750 to enable a Fellow or Associate of the RIBA to undertake a tour of three months duration to Mexico, Venezuela and Brazil.

The winner will be required to study the architecture and the building activities of Mexico, Venezuela and Brazil, and (1) to take photographs for the production of coloured slides to illustrate his reports (if necessary a camera will be lent for this purpose by the Marley Tile Co., Ltd.), and (2) to prepare a report upon each of the three countries, the use and copyright of which will remain at the disposal of the promoters and The Architectural Association.

Applicants must be under 40 years of age and must provide evidence of their office experience and of their special interest in the architecture and building activities of Mexico and South America.

Applications must be submitted by February 7 next. Further details may be obtained from the Secretary, The Architectural Association, 36, Bedford-square, London, WC1.

The applications will be considered by a selection committee consisting of the two following representatives appointed by the Council of the Architectural Association: Mr. Howard V. Lobb, CBE, FRIBA, and Mr. H. T. Cadbury-Brown, FRIBA, AA Dipl.(Hons); and one representative of the Marley Tile Co., Ltd.

TRINIDAD & TOBAGO SOCIETY OF CHARTERED ARCHITECTS

FOLLOWING a recent visit to Trinidad by Mr. Clough Williams-Ellis, MC, JP, FRIBA, when he spoke, under the auspices of the British Council, on "The Pleasures of Architecture," and "Town and Country Planning," the architects of the Colony have formed the Trinidad and Tobago Society of Chartered Architects.

The Governor of the Colony, who attended a cocktail party given by the architects in honour of Mr. Williams-Ellis' visit, has expressed interest in this new society, which started work by joining a panel to discuss tendering conditions and contract procedure with the local Building Trades Employers' Federation and Government representatives.

The first chairman of the Society is Mr. A. Prior, FRIBA, and Mr. J. R. Firth, ARIBA, is honorary secretary/treasurer. It is hoped that the Society will eventually become allied with the Royal Institute of British Architects; meanwhile it intends to promote exhibitions and lectures to further the cause of architecture in the area.

CONWAY ROAD BRIDGE

Work on the new Conway road bridge, which will replace the suspension bridge built by Thomas Telford in 1826, is shortly to be formally inaugurated by Mr. Boyd-Carpenter, Minister of Transport. Sir Percy Thomas, P-PRIBA, is the consulting architect and Mr. H. W. FitzSimmons the consulting engineer for the new bridge, for which a tender for £430,700 submitted by Sir William Arrol and Co., Ltd., of Bridgeton, Glasgow, has been accepted.

STEEL ERECTORS' STRIKE

Engineering employers decided on Tuesday to stop all overtime and weekend work by members of the Constructional Engineering Union from January 21 if the union persist in the strikes which they have been organising at various sites in London and elsewhere. It is understood that the employers are taking this step in defence against the union's "aggressive action."

UNAUTHORISED USE OF PROFESSIONAL AFFIX

Costs Awarded Against Architect

A STAFFORD architect was guilty of fraudulent misrepresentation when he led a client to believe he was an associate of the Royal Incorporation of Architects in Scotland by exhibiting a plate with "ARIAS" after his name, Judge H. S. Tucker decided at a special sitting of the Stafford County Court on December 22.

The architect, Frederick Grant-Tait, of Bridge-street, Stafford, was ordered to pay the court costs of his client, Edward Spencer Kelly, of Old Croft-road, Walton-on-the-Hill, Stafford.

At a previous hearing, in November, Mr. K. T. Braine-Hartnell, for Grant-Tait, said Grant-Tait was claiming the balance of his fees as architect for Kelly's house of £30 11s. 3d.

Plans were prepared and in June, 1951, a tender for £3,316 from a contractor, who had since gone bankrupt, was accepted. Later, there was a meeting with the contractor who submitted a fresh tender of £2,666, but the plaintiff's case was that he warned the defendant that it was a pure estimate.

It was also the plaintiff's case that the defendant varied the contract from time to time by suggesting a good many alterations, and work was held up for six months for window frames and other items which were among the alterations.

The house was completed in July, 1953.

Mr. Grant-Tait had been an ARIAS, but was struck off the register for non-payment of his subscription in 1945. He had served for six years in the army and he was struck off the register while he was in the army. He was negotiating for reinstatement at the time of the contract.

"These facts did not in any way affect his capability," said Mr. Braine-Hartnell.

Mr. J. E. Currall, of 12, Parkfields, Stafford, a chartered architect and formerly employed by Mr. Grant-Tait, said he prepared the plans for Kelly's house and Mr. Kelly had seemed extremely pleased with them.

Mr. G. Heron, for Kelly, said there were three main issues to be decided in the matter of fraud: whether or not the contract could be rescinded; had Kelly suffered as a result of that fraud; and had the plaintiff failed in his duty in over-certifying the amounts of payment to the builder for work completed.

Kelly counter-claimed for the return of fees totalling £205 19s. paid to Grant-Tait. He had paid the contractor £2,557 16s. and alleged that the work done was only worth £2,360 and that he overpaid £197 9s. 9d., on the certificates issued by Grant-Tait.

Giving judgment, Judge Tucker held that Grant-Tait had been guilty of fraudulent misrepresentation in describing himself as an ARIAS and chartered architect, and that Kelly was deceived and induced to enter a contract because of the fraud. At the same time he could not order Grant-Tait to repay all the fees but costs would be against him.

Mr. Kelly said he would not proceed with a claim for damages.

ADDRESS UNCHANGED

The LCC have announced that the office of the district surveyor for Wandsworth (Mr. G. M. Hall) will not now be changed, but will continue at 5-9, Mitcham-road, Tooting, SW17 (tel.: Balham 2246), until further notice.

THE NEW PLANNING ACT

Certificates of Unexpended Development Value

THE Central Land Board have issued the following statement on the issue of certificates of unexpended balance of established development value:

Section 48(1) of the Act provides that the Central Land Board shall, on application, issue a certificate stating whether any land has an original unexpended balance of established development value and, if it has such a balance, giving a general statement of what was taken by the Board for the purposes of Part VI of the 1947 Act to be the state of that land on July 1, 1948, and specifying the amount of that original balance, subject to any outstanding claims under Parts I and V of the 1954 Act. Further information may be added about any events which, under the Act, will cause deductions to be made from the original unexpended balance. A fee of 5s. (in postage stamps) must be paid on each application and, where a new apportionment is involved, a further fee of 15s. must be paid. The application must be sent to the District Valuer with the 5s. fee.

Section 48(2) provides that any public authority possessing compulsory purchase powers may, without payment, get from the Board a certificate of the unexpended balance of established development value of land in respect of which a notice to treat has been served, showing the amount of that balance immediately before the service of that notice. Certificates under this subsection are conclusive evidence of the facts stated in them.

Applications for certificates must be in the forms prescribed by Regulations (Statutory Instruments 1954 No. 1720), which came into operation on January 1. Forms of application and an explanatory leaflet giving details about the certificates under Section 48(1) and the procedure for getting them will shortly be obtainable from any of the Board's Regional Offices or from District Valuers.

GRANTS TO 35 HISTORIC BUILDINGS

Fourth List of Recommendations

DURING the last three months of 1954 35 grants for the preservation of historic buildings or their contents have been offered and accepted. The grants, totalling £70,000, are offered by the Minister of Works, acting on recommendations by the Historic Buildings Council for England, for Scotland, and for Wales. The 35 buildings are as follows:—

ENGLAND

The College of Arms, London, EC4; The Gazebo at The Grange, Croom's Hill, Greenwich, SE10; Wellington Rooms, Liverpool; The Old Hall, West Bromwich, Staffs; Blithfield Hall, Rugeley, Staffs; Town Hall, Tamworth, Staffs; The Commandery, Worcester; Cromwell House, Northampton; 9-12, The Shambles, York; Theatre Royal, Richmond, Yorks; Town Hall, Berwick-on-Tweed; Forde Abbey, Chard, Somerset; Collacombe Manor, Tavistock, Devon; Godolphin, Helston, Cornwall; Dodington House, Chipping Sodbury, Glos.; Kingston Lacy, Nr. Wimborne, Dorset; Hale Park, Fordingbridge, Hants; Ashdown House, Forest Row, Sussex; 41-43, North Street, Chichester; Murals at 132, Piccott's End, Hemel Hempstead, Herts; Hengrave Hall, Bury St. Edmunds, Suffolk.

SCOTLAND

Kellie Castle, Fife; The Weaver's Cottage, Kilbarchan, Renfrewshire; Kintore Town House, Aberdeenshire; Winton Castle, East Lothian (2nd grant); Drum Castle, Drumoak, Aberdeenshire; Loudoun Hall, Ayrshire; Craigievar Castle, Aberdeenshire (2nd grant); Gargunnock House, Stirlingshire;

WALES

Pen-y-lan, Meifod Montgomeryshire; Troy House, Monmouth; Taliaris Park, Llandilo, Carmarthenshire; Plas Coch Llanedwen, Anglesey; Pictures at Llanfihangel Court, Abergavenny; Monaughty, Bleddfa, Radnor.

With the grants previously announced during 1954 (on March 25, July 5 and October 4) this brings tne total number of buildings assisted under the Historic Buildings and Ancient Monuments Act to 114, and the total amounts of grants to about £285,000. (These figures exclude the grant in respect of Hazlewood Castle, Yorkshire, mentioned in the announcement of October 4; the owner subsequently withdrew his acceptance of the grant, as was announced on October 13, 1954.)

Nearly 550 applicants for aid have so far been received by the three Historic Buildings Councils, of which over 260 have so far been rejected.

LMBA

The New President

MR. L. J. HOLLOWAY, FIOB, the new president of the LMBA, is vice-chairman and managing director of Holloway Bros. He is the third member of his family to occupy the position, his uncle, Sir Henry T. Holloway, and his great-uncle, another Sir Henry Holloway, having held the presidency in 1924 and 1896 respectively. His father, Mr. Ernest C. Holloway, was president of the Institute of Builders from 1942 to 1947.

L. J. Holloway, FIOB.

Mr. Holloway was educated at Oundle, and after serving an articled pupilship with F. and H. F. Higgs, Ltd., during which he attended Brixton School of Building as a part-time student, he joined his family firm in 1931. He served in a variety of positions, his experience including work on the Glyn Mills Bank in Lombard-street and at the Empire Pool at Wembley. By 1939, when he joined the Royal Engineers, he had graduated to the position of general foreman and junior contract manager. During the war he served in the Middle East and France.

After demobilisation in 1945 he returned to Holloway Bros., and the following year was elected to the board. Four years later he became managing director. Mr. Holloway soon became active in LMBA affairs, thus carrying on a line of association which had hardly been broken since his grand-uncle's day. He was elected to the council in 1949 and to the administrative committee in 1950, and he has served as chairman of several of its committees. In 1951 he joined the ranks of the vice-presidents. He has been a member of the council of the National Federation since 1950.

Among the many famous buildings built by Holloway Bros. are the Bank of England, the Old Bailey, Chelsea Bridge and more recently the RAF Memorial at Runnymede. Among those with which Mr. Holloway has been personally associated are the big blocks of flats in Pimlico, the transformer station for the London Electricity Board in the City and a variety of buildings, including over a dozen factories, at Crawley New Town.

TRAINING OF APPRENTICES

Conference at Glasgow

A CONFERENCE was held by the Scottish Association for Building Education, recently, at the Building Centre, Glasgow.

The conference was arranged in two sessions, morning and afternoon, under the chairmanship of Mr. W. Nicol, a Glasgow builder and a member of the council of the Association. During the morning papers were given by Mr. T. M. Banks, Organiser of Further Education to the City of Glasgow, and Mr. N. Munn, who acts in a similar capacity for the County of Lanarkshire. The topic was "Day Release Training of the Building Apprentice."

MR. BANKS said that Scotland had fallen immeasurably behind England in its facilities for the training of building apprentices; education authorities had not fulfilled their obligations to provide the best possible technical accommodation and equipment for practical and technological subjects. The accommodation provided for the teaching of craft apprentices in the building industry was vastly inferior to that provided for apprentices in the engineering industry. Accommodation and equipment are vital and education committees should have the pressure of public opinion brought upon them to improve quickly the conditions under which apprentices are taught, whether it be classroom or laboratory subjects, or workshop training.

Mr. Banks went on to say that the general organisation should be concerned about changing the Scottish practice of the monotechnic type of craft colleges which had many disadvantages. The polytechnic colleges of England were more effective, and provided opportunities for social development, mutual respect and understanding between the sexes and between those who had bound themselves to different jobs. The association between education committees and the building industry in the matter of day release training had been a particularly successful one, and proof of this was to be found in the fact that the numbers of apprentices attending courses had increased considerably during the last few years.

MR. N. MUNN made a plea for the establishment of residential courses for the benefit of apprentices in remote communities who lived some distances from further education centres. He hoped that in Lanarkshire work would be started within the next 18 months on the first polytechnic college to be built in Scotland. In the discussion which followed the need to attract a better type of entrant to the industry was stressed.

The afternoon session was devoted to papers on "Building Science," given by Mr. R. M. Wark, Further Education Dept., Glasgow; "Craft Science," by Mr. S. T. Douglas, Cambuslang School of Building, and an illustrated talk on "Current Defects in Building" by Mr. D. K. Baron, of the Building Research Station, Thorntonhall. MR. WARK reviewed the wide field covered by Building Science and emphasised the importance of the subject now that new materials and processes are being frequently introduced. MR. DOUGLAS spoke of the difficulty of teaching science to craft apprentices, many of whom had weak educational backgrounds. Owing to many deficiencies in mathematics and English the scope of experiments and demonstrations was very limited.

The Traditions of Conduit Street

PASSING THE RIBA EXAMINATIONS FORTY YEARS AGO

By C. W. Craske, MM, FRIBA

I HAVE been turning over my old RIBA examination papers, and feeling renewed sympathy with those whose hopes and fears are centred on the dreaded letter which seems so long in coming. The reasons which have from time to time been given for the high proportion of failures are no doubt true as far as they go, but in order to get to the root of the matter I think one needs to be old enough to remember the constitution and traditions of the Royal Institute some 30 to 40 years ago. The views I am about to express are, however, entirely personal, and are not intended to represent or criticise those officially put forward.

Soon after the First World War I was admitted as an associate, having passed the Intermediate in 1911 and made a creditable showing for the Final—enough to gain the partial exemption generously extended to ex-service men. As a very new member I vividly recall my early impressions of that long, bleak room in Conduit-street, which the late Lord Sumner said reminded him of a coroner's court, where we were examined and where, if successful, we later on used to assemble once a month to hear the lecture of some distinguished man. The lecturer was escorted in procession to the platform by a number of venerable and portly gentlemen in evening dress, who had just entertained the great man (and themselves) to dinner; and he proceeded, as a rule, to give an interesting and instructive speech. Distinguished guests moved and seconded the vote of thanks; but when the meeting was "thrown open for discussion" we discovered that only very senior members were expected to take any further part in the proceedings. On one occasion, we juniors were firmly reminded in the *Journal* that it was our place, like other small fry, to be seen and not heard. Experienced back-benchers did not wait for the vote of thanks, which seldom made any notable contribution to knowledge, but slipped out during the applause which followed the lecture, and thereafter turned their undivided attention to the buffet, which in those days was open for the rest of the evening.

ACADEMIC DRESS

The Royal Institute was very conscious of its intellectual status, which indeed stood high, it being generally held that membership was equivalent to the possession of a university degree. In furtherance of this belief, expert advice was sought on the possibility of having an academic dress, to be worn on special occasions, such as the attendance of a body of members at a civic service. Readers with old volumes of the *Journal* may find a picture of a very learned-looking member, arrayed in a long black gown and hood with orange piping, and a four-cornered biretta, looking as if he had just had conferred upon him an honorary degree at Oxford or Cambridge —which was precisely the impression it was intended to convey.

This ill-starred proposal was rejected with a mixture of ridicule and alarm, the humour of the outfit being apparent to some, the probable cost of it scaring the others; and although one member was reported to have had a set specially made for himself to this specification, in anticipation of its becoming standard practice, the project was quietly shelved, and saw the light no more.

THE ACADEMIC SPIRIT

Though academic dress was never worn, the academic spirit nonetheless persisted. When Paul Waterhouse was president, men renowned in literature, the law, and kindred pursuits supported him upon the platform. The cross-talk between these distinguished men, who were old university friends, was sometimes unintelligible to humble members of the audience—like the conversation in "David Copperfield" at Mr. Waterbrook's dinner party between Mr. Henry Spiker and Mr. Gulpidge. I wonder what students of today would have thought of those meetings, when you felt no small degree of awe in the presence of men like Waterhouse, Aston Webb, Blomfield or Edwin Cooper—though not without pride in belonging to such an august "body politic and corporate."

That brilliant period—and it was brilliant—passed all too soon; but an underlying culture displayed itself in many ways, sometimes strange and novel. In Raymond Unwin's term of office, the "Mistress Art" was often "at home" to the sister arts. Music was introduced at the meetings; and somewhat embarrassed members were regaled with string quartets playing Op. this or Op. that, while non-musical hearers did their best not to fidget, and the deaf possibly best once in a way were not disposed to regret their disability. Later on, the drama was encouraged: a society was formed, and a very well-known figure in the architectural world tried his hand at writing a play with a suitable professional theme. I myself attended some happy, informal play readings at Dr. Lanchester's house in Bedford Square, before the second war brought such cultural activities to an end.

Since then, a gradual change has become apparent. The *RIBA Journal*, which at one time was about as lively as the Transactions of an Antiquarian Society, and thrived on much the same material, began to carry articles in lighter vein, accompanied by sketches quite startling in their unwonted frivolity. But the examinations were getting ever more difficult: ability to design had to be shown at Intermediate stage, though it was not required in my day until you reached the Final; and the rapid advance of scientific research called for knowledge difficult to acquire except by whole-time study, preferably at a university or recognised architectural school.

EARLY QUALIFICATIONS FOR A CAREER

Success in the external examinations was always highly valued, but up to 1914 to pass the Final was officially held to be no more than a test of fitness for further study, not an end in itself. The successful candidate was then expected, among other things, to travel, compete for prizes, and generally to proceed (to quote the syllabus) "with those further studies, proficiency in which would qualify him to engage in successful practice as an architect."

During this period he might earn a pound or two a week as an assistant in a private firm; and if he had neither money nor influential friends, and could not win a competition, he might well stay there all his life. But there were few opportunities in municipal life to turn to; and if he proved unable in the long run to set up for himself, or to be taken into partnership, his professional failure was complete.

In all this, background education and culture counted for much. It was important that the architect should be at no disadvantage in these respects with his clients, colleagues, and members of other professions; and it was essential that he should hold a position of superiority over the builder and the craftsman. This is sheer snobbery by present-day standards, but in a highly competitive world, in which advertising was forbidden and anxious beginners sometimes wondered how clients were to be got at all, the purpose of a liberal education was to ensure that you could mix on equal terms with those who by their positions in life were the likeliest people to provide you with a commission. As a former president was reported to have told a group of students, when dining with Lord and Lady so-and-so there was no harm in mentioning casually that you had started practice.

My own beginnings were not so propitious. Following an advertisement in our local paper for a "smart youth with taste for drawing" I was articled well before my 16th birthday; and on the completion of my three years, an architect to whom I wrote replied that instead of asking for a job I ought still to be at school —which was true enough, though a bitter pill to swallow.

CONCLUSION

The time is past when architectural students were set to design a summer villa on a rocky promontory for a member of the Roman Senate, or to draw the Five Orders from memory. But the tradition of classic culture and learning, which such exercises served to foster, is still active, being reflected in the figures of examination results, so constant in their ratios of failures to successes. It can also be seen in the rapid professional progress so often made by those who have been fortunate enough to have shared in the corporate life of the universities.

Thinking this over, I begin to feel that it may be the duty of those whose careers are nearly ended to dissuade, as strongly as possible, youths straight from school who, aided and abetted by fond parents, are under the impression that they can fairly easily qualify as architects by taking an office job and working by correspondence course or at the local evening institute. These lads may, and in time very often do, make excellent assistants; but those who finally qualify are few and far between, only the most exceptional being able to overcome, in the course of

O

repeated attempts, the initial handicap of what may be called lack of background education.

There are always a few bright spirits whom nothing will stop or discourage. I knew one who gained his associateship, by examination, while slaving away at "architect designed houses" for a speculative builder; and a few years after qualifying he turned his attention to another profession, at which I hear he is doing equally well. But the unfortunate majority of those I meet, unable to write a letter of application in simple, unaffected English, and likely to spell accommodation with one "m" to the end of their days, should, I think, be advised to try some less exacting calling. One could well quote to them Mr. Weller senior's views on marriage: "Vether it's worth while to go through so much to learn so little, as the charity boy said ven he got to the end of the alphabet, is a matter o' taste. I rayther think it isn't."

THE ECONOMICS AND DILEMMAS OF THE SMALL QUANTITY SURVEYOR'S OFFICE

By a Provincial Quantity Surveyor

THERE is no doubt whatever that the most economic form of establishment for a quantity surveyor is that in which the principal does most of the taking-off himself, assisted by one good assistant of "final" standard who does the simpler parts of the taking-off and the working-up, which is checked by the principal. Squaring dimensions, casting abstracts, answering the telephone and typing the letters is the province of the pupil or office junior. In an office such as this, only two rooms are needed (probably on the top floor above shop premises), expenses are kept to the minimum and all three work hard and with tremendous enthusiasm. The quality of the work turned out in such an office is usually of a very high standard, and the firm's clients receive the personal attention of the principal at all times.

Unfortunately, expansion is usually forced upon the ambitious quantity surveyor with such an establishment. The large job for which he has been angling materialises, it is wanted in a hurry and he has to increase his staff, and probably take a larger office. This is usually the beginning of his troubles. If his practice was in or near London in the period between the wars there was available a floating population of itinerant surveyors, known as "chars," upon whose services he could draw, and with whose services he could dispense as soon as the job was finished. Nowadays, and particularly in a provincial office some way from a large centre, if he needs an extra assistant to deal with a large job or a temporary increase in work, the quantity surveyor must advertise, offer an attractive salary, and take on a permanent assistant who may also need help in finding a house locally for his family which he will then establish in the district. The demand for staff is often greater than the supply, particularly in a building boom, and the quantity surveyor must pay a high salary and offer a permanency if he is going to get the help he so badly needs.

BALANCE UPSET

Immediately he has taken such an assistant on his staff, the optimum balance of his establishment has been upset, and there are bound to be times when some one or other in the office is held up by a bottleneck and is not fully employed. If the large job which necessitated the extra assistant is not immediately followed by further work of comparable size, there will be some pretty demoralising heel-kicking going on in the office, and the personal income of the principal will be reduced.

Because the quantity surveyor is an honourable employer, he hesitates to discharge his new assistant and keeps him on in the hope that future work will help him to recoup his temporary reduction in income. He may know of a job "on the boards" of a client; and even although the job may be delayed, as it often is in these days of bureaucratic controls, he must retain his uneconomic staff so that he can cope with it when the job eventually materialises.

DIFFICULT DECISIONS

If the practice increases further and the quantity surveyor has again to increase his staff, the above troubles are magnified by each new assistant. Unavoidable heel-kicking is inevitably increased, and what used to be simple book-keeping must become accountancy, with the principal ever on the watch for the moment when he starts to lose money. And when that moment comes, he has to decide whether to reduce his staff, and in the provincial practice this is not to be done lightly, or whether he can carry his losses until the volume or type of work entrusted to him improves the situation. He must by now initiate a costing system (a further employment with no direct financial reward). He will find from his job costs either that overheads are increased or that individual projects are becoming less profitable, and this will be largely due to the fact that assistants are very reluctant to show heel-kicking time as such on their time sheets in case the "boss" should decide to dispense with their services. More time will be spent on unprofitable time-fillers, such as the maintenance of records for approximate estimating. Desirable as these records undoubtedly are, their maintenance shows no direct profit, indeed it shows a loss.

After the inevitable bad year caused, perhaps, by an unforeseen delay in, or cancellation of, an expected project; or, perhaps, by a hoped-for client being wooed successfully by a London rival wanting to establish a branch office in the district, the surveyor must either look further afield for his work or reduce his staff. If he successfully looks further afield and establishes a branch office, his worries will necessarily increase.

If, on the other hand, he decides to reduce his staff and reluctantly dispenses with the services of one or more, he must make up his mind whether he will in future refuse to accept commissions beyond the present capacity of his establishment, with the possible consequent loss for all time of a valuable client, or whether he will, when the time comes, embark once more on the slippery spiral of increasing his staff.

OPTIMUM DISTRIBUTION

Assuming that the provincial surveyor has progressed beyond the minimum happy establishment first described, and that he has come to the decision to maintain his staff at a certain fixed level and to be strong-minded enough to refuse commissions beyond the capacity of his establishment, he must then decide upon the optimum distribution of the various grades of assistant in his office.

Let us, therefore, examine in detail a typical establishment which must be based on the relative output of takers-off, workers-up, etc., and upon the fact that some processes require a minimum of two assistants for the purpose of checking one another's calculations. The following figures are purely hypothetical and must be revised, as necessary, in the light of experience and special circumstances. They are based on the hypothesis that a taker-off can produce in eight hours dimensions which can be squared in 15 minutes, checked in 15 minutes, abstracted in 90 minutes (average between opening the abstract and following on), checked in 30 minutes (ditto), billed in 90 minutes, checked in 40 minutes and vetted in 20 minutes.

Looking at the above figures, one taker-off will feed two (minimum) workers-up as follows:—

Taker-off	500 minutes
Worker-up A and Worker-up B	140 minutes each

On this basis, it will need the output of almost four takers-off when busy to employ fully two workers-up.

In practice, the junior taker-off will probably do some of the working-up; and depending upon the proportion of his time spent on each activity and the finances of an average establishment would look something like this:—

	Per Annum £
Principal (part-time taking-off and part-time administration)	1,000
Senior taker-off	700
Intermediate taker-off	500
Junior taker-off	400
Senior worker-up	450
Junior worker-up	300
Office junior/pupil	150
Typist	250
Salaries	£3,750
NHI (say)	100
Rent, rates, light, etc.	350
Fares, travelling, expenses, etc.	200
Printing, stationery, etc.	150
Car expenses	150
Postage and telephone	75
Insurances and bank charges, etc.	25
Total outgoings	£4,800
Assuming a minimum profit of 10 per cent. (necessary to justify the existence of the firm and to increase reserve against the difficulties referred to) (say)	400
Interest on capital	300
	£5,500

Thus it will be seen that, in order to ensure the very low gross income of

£1,400 a year for the principal, who takes all the risks and worries above described, it is necessary to earn not less than £5,500 in fees every year. Assuming that, in the provinces, the majority of jobs are small ones and the average fee (including final accounts) is 2½ per cent., it will be necessary for such a firm to be entrusted with building work of a capital value of not less than £220,000 every year.

Theory and Application of Stressed Concrete

LECTURE TO CLERKS OF WORKS

AT a meeting of the Institute of Clerks of Works, held at 66, Portland-place, W1, recently, Mr. R. F. Galbraith, past-president of the Institution of Structural Engineers, gave a lecture on Stressed Concrete. Mr. Cecil C. Handisyde, ARIBA, presided.

MR. GALBRAITH said that all concrete in a structure was stressed, but he would deal only with those stresses which occurred before the main structural loading was applied. Between 1896 and 1907 numerous attempts had been made to improve reinforced concrete by stretching the reinforcement, but it was not until 1907 that a now famous French engineer, Monsieur Eugène Freyssinet, turned his attention to prestressing. Freyssinet carried out some full-scale tests which led him to suspect the importance of creep, i.e., the increase in strain, or deformation, taking place under constant stress. About 20 years later, Dr. Faber and Dr. Glanville published in England the result of their researches on creep in concrete.

Freyssinet's own conclusions were confirmed, and he was enabled to develop his theory of prestressing.

STRENGTH OF CONCRETE

The main materials used in prestressed concrete were high grade concrete and high tensile steel. The main factors affecting the strength of concrete were the ratio of water to cement, the grading of the aggregate and the degree of compaction. Sufficient water must be used to allow the chemical reactions during the setting of the cement to take place, and to allow the concrete to be worked into position; and as the ideal quantity for the latter condition was usually more than the optimum quantity for maximum-strength concrete, a compromise between strength and workability became necessary. The effect of compaction was such that a concrete consolidated to only 90 per cent. of the maximum possible had less than half the potential strength of the mix.

In prestressed concrete work it was customary to require a guarantee from the contractor that the concrete would have a given crushing strength at 28 days as shown by test cube results, and for this it was quite normal to require 5,000 lb. or 6,000 lb. to the square inch. Clerks of works might help contractors to maintain the required strength by keeping a careful eye on the amount of water used and the degree of compaction being obtained.

The steel used in prestressing work might be a high-tensile wire of a diameter of .06 inches up to .276 inches, with a breaking strength from 95 to 150 tons to the square inch. Alternatively, high-tensile alloy steel bars might be used. These would be of a diameter of from half an inch to one inch, and their ultimate strength should be from 54 to 72 tons to the square inch. Steel wire for prestressing might be delivered in small diameter coils, in which case it required straightening before use; but in this country wire was also available in coils of eight feet diameter, such wire requiring no further straightening. Steel wire often needed degreasing where bond stress was required by the design.

Apart from the strength requirements of concrete and steel one of the most important properties of each material as used in prestressing was its creep. It had been shown that the rate at which this increase in strain, or deformation, occurred was dependent on the amount of stress and the time during which this was applied. The result of creep was a reduction in the stresses caused by the initial prestressing. Allowances were made for this in design.

Two main methods of prestressing had been developed, i.e., pre-tensioning and post-tensioning. In pre-tensioning the steel was first tensioned to the required strength and the concrete was then cast around the stretched wires. On setting, the wires became bonded to the concrete. When the concrete was sufficiently matured the steel was released from its anchorages and the stress in the wire was transferred to the concrete through bond. The usual method of pre-tensioning was the long line method in which the steel wires were stretched between anchorages often 300 ft. apart.

ALTERNATIVE METHODS

Post-tensioning contrasted with pre-tensioning in that post-tensioning implied that the concrete was first cast and matured. The steel wires, usually in the form of a cable, were either placed in the mould in a tube before concreting, or else threaded through a duct left in the concrete, and then tensioned and anchored at the end of the concrete unit. Much ingenuity had been directed to the methods of tensioning and anchoring wires, the two best methods being those devised by Monsieur Freyssinet and Professor Magnel. A third system was the Lee McCall system, which used alloy steel bars with special threaded ends and high efficiency nuts, developing the full strength of the bar used.

The lecture was illustrated throughout by lantern slides, which showed first the theory and afterwards the operations involved in making prestressed concrete.

QUESTIONS

In answer to a question on how all the wires in a cable were made to take the same stress, the lecturer replied that the eight or ten wires in the cable came through the head of the jack and were fixed to the jack. They were all wedged in. The jack was pulled back and all the wires came together. The actual extension could be measured on a number of wires—on all the wires if necessary—and careful tests had shown that the wires of the Freyssinet cable were approximately uniformly stressed.

In reply to another question, Mr. Galbraith said that any drop which came in the tension was due, either to shrinkage of concrete on setting, slip of the wire in the anchor device, or creep of the concrete. Figures for creep varied, but the allowance for creep and shrinkage would be about 15 per cent. in most cases. This was the result of very careful tests, and the allowance was made in the design stage. In post-tensioning, the older the concrete was before tensioning the less would be the shrinkage. In the case of an *in situ* job, or where the concrete was not fully matured, the shrinkage might be higher than in a factory-made job where the concrete could be adequately matured.

GROUTING

In reply to a question about grouting, the speaker said that grouting was rather a vexed question. It depended on the design and use of a particular structure. In many cases the cable was grouted; in others it was not.

A member of the audience said he had experience of a job with prestressed Freyssinet beams. These cambered and the camber varied.

The lecturer replied that if the prestresses were carried out carefully and conscientiously the camber should be fairly uniform, and where architects were prepared to use a prestressed beam he thought they were prepared to accept the camber. He was afraid camber could not be avoided. Variation in camber could only be overcome by very careful attention to workmanship and strength. In an ideal job it would be possible for the camber to disappear on loading, but the maximum designed load was very rarely applied. If you designed for that condition, as you must do, you were bound in most cases to have a residual camber.

On the subject of fatigue, Mr. Galbraith said that careful experiments had been carried out with normal stresses up to 120,000 lb. per square inch with residual stresses of 108,000 lb. per square inch. It had been found that those stresses could be applied repeatedly up to 2,000,000 times with perfect safety.

Questioned as to what clerks of works should look for so as to avoid failure, Mr. Galbraith said that most designers indicated their lifting points and their stacking points in prestressed work. If you were dealing with a factory product the structure was probably under guarantee as to the strength of the concrete. The clerk of works should take every opportunity of visiting precast works so as to check the size of moulds and the position of cables and rods; but he had no responsibility for what went on there.

Replying to other questions the lecturer said there was no reason why a cable should not be used on the outside of a concrete member. As to fire risks he thought the latest pronouncement was that provided the cable had adequate cover there was no greater risk than with reinforced concrete.

"NEW HOMES FOR OLD"

Ministry's Latest Advice on Modernisation

"NEW Homes for Old—Improvements and Conversions," which was published on January 7 (HMSO, price 3s. 6d.), is the latest in the series of handbooks prepared by the Ministry of Housing and Local Government to illustrate developments of housing policy.

The two previous publications, "Houses 1952" and "Houses 1953," which were produced as supplements to the Housing Manual, 1949, showed how by compact design and layout building costs could be reduced and valuable savings in land could be achieved without loss of standards or amenity.

The new handbook takes a different theme—the vital importance of making the best possible use of the nation's older but structurally sound houses. Generous grants are available for their improvement and conversion, and "New Homes for Old" shows how these can be obtained and deals with some of the technical problems likely to arise in carrying out an improvement or a conversion scheme.

In a foreword to the handbook, MR. DUNCAN SANDYS, Minister of Housing and Local Government, says: "I commend this handbook to property owners, architects, builders and local authorities. I hope it will inspire useful ideas for improvements and conversions and so make its contribution to the solution of this important aspect of our housing problem."

AGE OF HOUSES

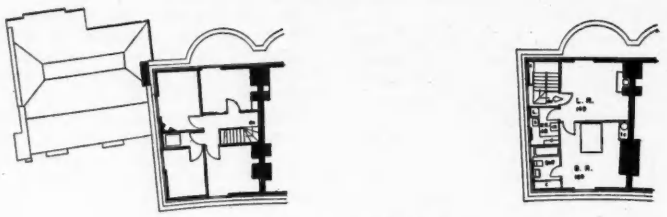
The introduction to the handbook says "About one-third of the houses in England and Wales were built more than 65 years ago. Many are structurally sound, but few have the amenities and comfort which people rightly expect today. Housing standards have risen substantially since 1939. Since 1890 they have been revolutionised.

"There can be no question of pulling structurally sound houses down — the nation could not afford to replace them in addition to its big programme of new building and slum clearance. It would be the grossest extravagance to attempt it. The problem is to bring them up to date, and to turn them into comfortable modern homes.

"Generous grants are available for their improvement or conversion.

"This handbook is addressed to all concerned to make the best possible use of our structurally sound existing houses. It is intended to help owners—whether private individuals, local authorities, housing trusts, companies or other large landlords. It includes technical points for the architects, surveyors, builders and others to whom owners may turn for expert help. It provides guidance for the local authorities, not only as owners but also in deciding other owners' applications for grant."

The first chapter of "New Homes for Old" describes the grants in detail and explains how they can be obtained. Grants, it says, can be paid towards the cost of modernising any privately owned house built before 1945 and for turning



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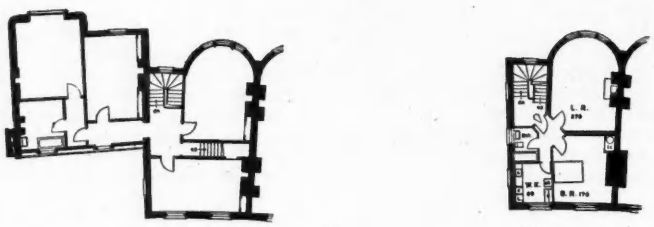
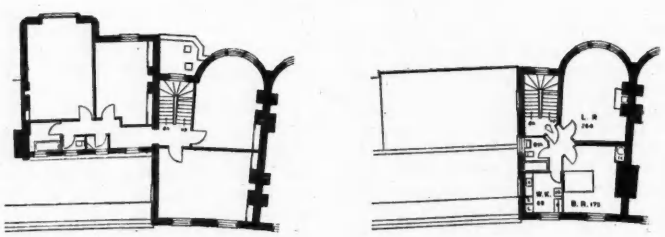
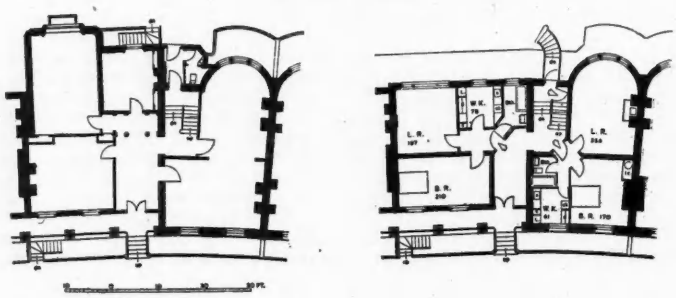


SECOND FLOOR PLANS



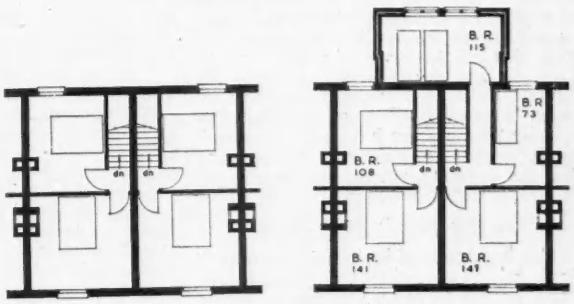
FIRST FLOOR PLANS



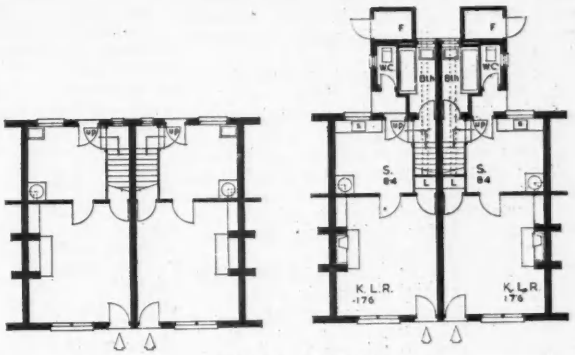
THE PARAGON, BLACKHEATH. The opportunity was taken during reconstruction after war damage to convert the property into six self-contained flats, each including a bathroom and w.c., and a modern kitchen. Improvement grant was £7,428. Architect for conversion: C. Bernard Brown, LRIBA (Figs. 72-78 in Handbook).

URBAN TERRACE HOUSE, TYPE D

(Figs. 12, 13, 14 and 15 in Handbook)

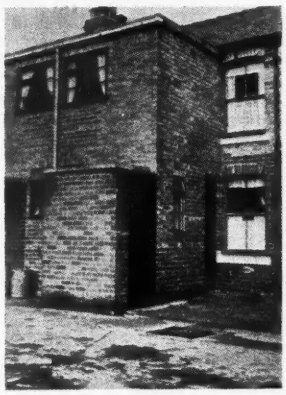


FIRST FLOOR PLANS

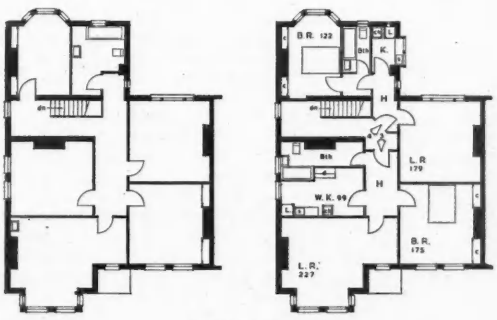


GROUND FLOOR PLANS

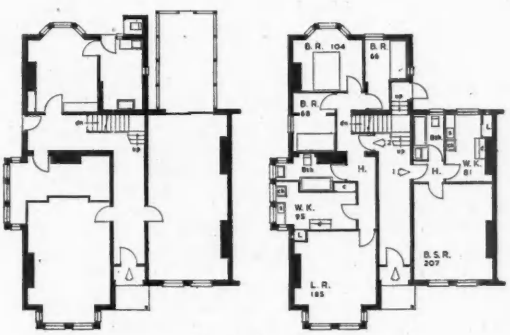
Before Improvement After Improvement



An actual example from Laughton Common, Rotherham RDC, of "two up and two down" terrace houses without back additions and with staircase alongside the party wall. A new bathroom and separate w.c. were built onto the back of each house, the kitchens were modernised, mains electricity installed, and an additional bedroom to alternate houses built over the bathrooms. On this the Handbook comments: "This kind of scheme is only possible where the houses are in common ownership. An alternative arrangement might have been to plan a combined bathroom and w.c. with access from a ventilated lobby entered from a half-landing." The average cost per house was £378 and the architects for the improvements were Taylor, Knight & Co., ARIBA. Back views of houses "before and after" are shown.



FIRST FLOOR PLANS



GROUND FLOOR PLANS

Before Conversion After Conversion

SUBURBAN HOUSES: A house at 272, Plashet-grove, East Ham. This was a semi-detached "villa" too large for a single family. Plans of the house before and after conversion show that it has been divided into four self-contained flats, each with combined bathroom and w.c., and a fully equipped kitchen. There are two 1-bedroom flats, one 3-bedroom flat and a bed-sitting-room flat. Hot water is from gas multi-point heaters. The estimated cost of the conversion was £1,956—an average of £489 per flat. J. E. Austin, MBE, chief housing officer, East Ham CB (Figs. 44-46 in Handbook).

a building erected for some other purpose into a house or flats.

There are certain reservations. Each dwelling improved or provided must be self-contained and must be brought up to a defined standard. It must have a useful life of more than 15 years; the total cost of the modernisation must be £100 or more per dwelling, and the scheme must have been approved for grant before the work is started. The amount of the grant is based on the estimated cost of the work and can be up to half the estimate, subject to a maximum of £400 for each dwelling to be produced.

MODERN STANDARDS

The handbook describes improvement work as "work, other than ordinary repairs, needed to bring a house or flat up to modern standards of comfort and convenience," and says that improvements most commonly made in older houses consist of one or more of the following items:—

Providing an indoor water supply or bringing gas or electricity into the house from a near-by main; in rural areas sinking a new well.

Putting in a bathroom or an indoor w.c.; changing over from a cesspool to main drainage.

Installing a hot-water system, or standard kitchen equipment like sinks and draining boards.

Doing any work needed to put right any fundamental defects in the structure of the house—such as remedying dry rot and putting in a damp-proof course; changing the level of ceilings, floors or roofs, in order to get a proper ceiling height; putting in a new staircase to replace one that is inadequate by modern standards, or badly placed.

Making new windows in order to improve lighting and ventilation.

Providing proper storage for food or fuel.

Adding an extra room where it is necessary to provide adequate living space.

Conversion is described as the structural work needed to divide a large house —or a pair or a group of houses—into self-contained dwellings, or to make a house or flats out of a building erected for some other purpose, as well as works of improvement listed above.

EXAMPLES

The second chapter deals with improvements in detail, and reviews the problems most likely to be met in improving urban and rural houses. Plans are reproduced to show possible solutions to these problems and there are illustrations of improvement schemes which have been undertaken in Rotherham Rural District, Castle Combe, Wiltshire and Sudgrove, Gloucestershire. A special section, illustrated with examples from Bethnal Green, and Liverpool, deals with improvements to flats, and another section on almhouses, shows an actual improvement carried out to the St. Pancras Almshouses, NW5.

"CHEAPER THAN NEW BUILDING"

The next chapter discusses conversions which, it says, can provide additional modern houses at less cost in materials, labour and money than new building would require. "Conversion takes no more land away from agriculture," the handbook says. "The roads, public services, shops, social and other facilities the residents of the new houses will need are there already. And the residents will live in the accustomed environment and not be put to heavier expenditure of time and money in getting to their work."

This chapter is illustrated with plans and pictures of the Ministry's conversion of a St. Pancras terrace which was exhibited in London last summer, and with a conversion carried out in a suburban house at East Ham which produced four flats; country conversions at Chilmark, Wiltshire, and Tunley, near Bath; and conversions of houses of architectural and historic interest at Blackheath and Bath. Conversions of non-residential buildings at East Molesey, Surrey, and Bath are also illustrated.

A chapter of technical advice discusses in detail the problems most likely to be encountered in bringing old buildings up to modern standards and indicates what work will normally qualify for grant and what will not. The last chapter deals briefly with the improvement of environment. It urges local authorities and large property owners to do all they can to make the surroundings of improved houses more attractive. "Both have a stake in stopping the further deterioration of the area and in rehabilitating it so that it may be pleasant to live in for many years to come," the handbook says. "Confidence that a district is not on the down grade will naturally encourage property owners to invest their money in improving their property. A plan and programme for the future of the area will give them that confidence."

SMOKE PREVENTION AND THE BUILDER

From a Correspondent

IT has only slowly been realised that not only industrial smoke but the smoke that originates from domestic fires is of danger to health and causes "smog." The existing law makes it an offence to set a chimney on fire whether accidentally or intentionally but the penalty is small. In S.104 of the Public Health Act, 1936, the local authority are empowered to make building by-laws requiring the provision in buildings other than private houses of arrangements for heating and cooking calculated to reduce or prevent the emission of smoke, but no such by-laws have been confirmed.

The recent report of the Beaver Committee on Air Pollution (summarised in *The Builder* of December 3), considers fully the question of smoke arising from domestic fires and makes interesting suggestions. There is in paragraph 83 of the report a direct recommendation to builders that they should follow the practice of local authorities instituted at the instance of the central Government of installing improved appliances capable of burning coke efficiently in the new houses they build. The fear that coke results in carbon monoxide poisoning is not justified where proper appliances are used. It is suggested that gas and electricity should be encouraged, especially for cooking purposes, by the removal of the present purchase tax of 50 per cent. on gas and electric room and water heaters.

It is recognised that coke must be widely utilised and in order to release more coke for domestic purposes it is suggested that the central heating of the offices of commercial concerns and public authorities should be carried out by the substitution of oil. Specifications of quality and methods of testing coke should be prepared by the British Standards Institution.

EXCHEQUER ASSISTANCE

Local authorities who had private Acts in force giving them the requisite powers could institute smokeless zones; now a general power is proposed. There is also the suggestion that larger areas should be classified as "smoke control areas" where domestic users would be required to use only smokeless fuels, bituminous coal containing not more than 20 per cent. of volatile matter or manufactured fuels having similar smokeless qualities. As an incentive to private individuals who wish to install approved types of appliances in these areas it is thought by the committee that there ought to be a contribution from public funds. The Exchequer should contribute half and the local authority part of the balance as they think fit, but the Exchequer payment should be dependent on a contribution from the local authority. Therefore more than half will be met from outside sources and those who fit the new appliances may have to advise the owner to apply and receive sanction for the work before it is carried out.

In appendix IX of the report is a memorandum on domestic appliances which is of interest. It is a condition of tender for local authority houses that the appliances be included in a list of recommended appliances published by the Coal Utilisation Council. Tests have been taken by the British Coal Utilisation Research Association on designs of down-draught burning fires and they have shown that smoke emission is reduced to one third. "Throat restrictors," either as separate units or as integral features of new appliances, have been useful to limit excessive ventilation. It is important that there shall be convection as well as direct radiation from the fire.

So far as new houses are concerned it is suggested that the choice of more efficient and suitable types of solid fuel appliances would be encouraged by providing in place of the conventional surround a recess into which could be fitted a free-standing appliance. This would facilitate not only immediate installation of efficient types of appliances but their replacement later by other types if desired.

PIONEER COURSE AT WIRRAL

A pioneer course for those engaged in the building industry was recently held at Burton Manor Industrial College, Wirral, the object of which was to help combat rising costs in the industry. It was to examine the problems of organisation that a big firm of civil and engineering contractors in the North-West held the course for a number of its employees. It was stated that, before the war, scarcely any attention was paid in the industry to organising the works and the workers efficiently.

RECENT DEVELOPMENTS IN CEMENTS AND ADMIXTURES FOR CONCRETE

By J. E. Guest

IN recent years many new types of cements have been made available and a greater number of admixtures to be used in concrete in addition to, or in place of part of, normal Portland cement have been marketed. Some of the new cements are of use in exceptional circumstances only or for unusual work, but the admixtures are more widely applicable. Below are given brief descriptions of the properties and uses of some of these new materials.

Special Cements

LOW-HEAT CEMENTS

One of the difficulties in the placing of large masses of concrete, as in the construction of gravity dams, is to reduce the amount of heat generated during hydration of the cement. If precautions are not taken to dissipate this heat serious cracking may occur, and mechanical methods such as pumping cold water through pipes embedded in the concrete have been used, notably in the USA, but have been abandoned because of their cost.

The total amount of heat liberated by the cement is fairly constant for any particular proportion of cement to aggregate, but the rate at which heat is evolved is dependent on the time taken for hydration. Consequently the temperature of a mass of concrete will rise more rapidly with a rapid-hardening cement than with one hardening more slowly.

This has led to the manufacture of "low-heat" cements of which one type (for which there is a British Standard, No. 1370) has been available in this country for a number of years, and recently to the introduction of a completely new process for the manufacture of a Portland blast-furnace cement. The method, known as the Trief process, is a Belgian invention. It has been used for the construction of dams in France and is now being used for two dams in Scotland. In this process slag, from the steelworks, is ground to the required fineness in wet mills on the site. From the grinding mills the slurry, with a water content of about 30 per cent., is passed to tanks in which it is kept agitated by stirring gear and compressed air until it can be pumped to storage tanks near the batching plant. The slurry is weigh-batched and introduced into the mixer with the other materials (Portland cement, sand and coarse aggregate). The proportion of slurrry to cement is about 3 to 1. The process dispenses with the need to grind together the slag and the Portland cement as is the case with ordinary Portland blast furnace cement.

Concrete made with Trief cement takes longer to harden than normal Portland cement concrete and thus the rate of evolution of heat is reduced. Crushing tests of concrete made in this manner resulted in compressive strengths of 1,540 lb. per sq. in. at an age of three days, and 2,742 lb. per sq. in. at seven days. This type of cement is also more resistant to sulphate-bearing waters in the soil than is Portland cement.

EXPANDING CEMENT

A further disadvantage of normal Portland and high-alumina cements is their shrinkage on setting. As is well known, this shrinkage is closely related to the moisture content of the concrete, the contraction increasing as the concrete dries. Consequently most of the work concerned with reducing shrinkage has been in the direction of improving the manufacture and curing of concrete, but in the last few years a great deal of attention has been given in France to the production of a cement which during hydration expands by an amount not only enough to compensate for any drying shrinkage but which may actually exceed the drying shrinkage. Work on expanding cement is generally associated with the name of M. Henry Lossier, a French consulting engineer.

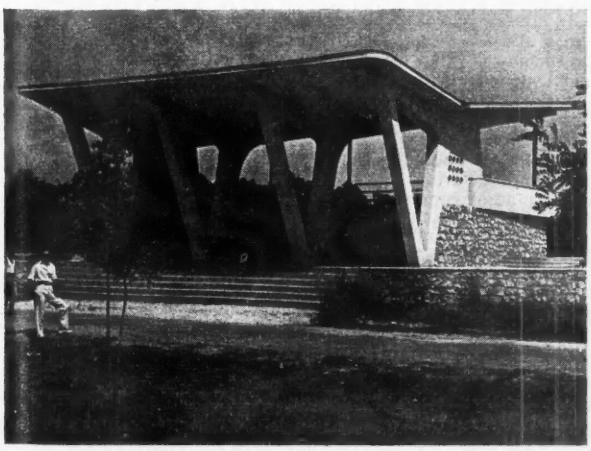
The cement is prepared from a mixture of three materials, namely: Portland cement, which imparts its particular properties to the final product; an expansive agent, which is generally a sulpho-aluminate clinker; and blast-furnace slag, acting as a stabilizing agent by reason of its slow absorption of the expansion agent. By combining these three materials in various proportions it is possible to control both the intensity and duration of the expansion which, for example, with neat cement paste may be as much as 5 per cent., and can be allowed to take place between one day and 30 days. The expansion of concrete made with such cement is, however, considerably less than this.

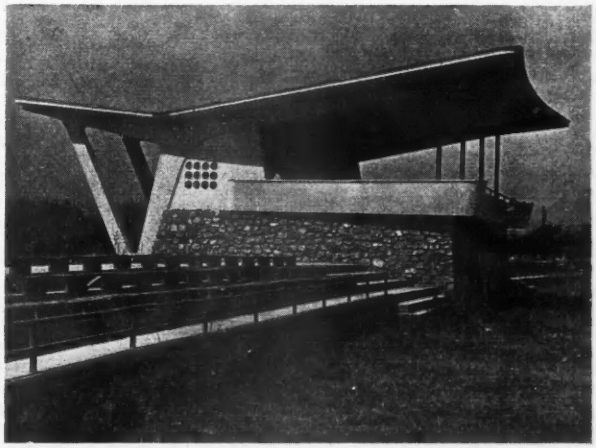
Expansive cements have obvious applications in underpinning or similar foundation work, and one of the earliest uses was in the underpinning of a wall of the Rihour Palace, in Lille. This was achieved by excavating in short lengths below the base of the wall, driving bored piles (of the type in which short precast elements are placed one on top of another as the elements are forced into the ground), and finally forming the last element *in situ*, using a concrete made with expanding cement. This element was cast between the top of a pile and the underside of the wall. The expansion obtained was such as to exert a force of about 20 tons on the pile and the wall.

A further use is to form an expanding *voussoir* at the crown of an arch in such a manner that it acts as a jack incorporated in the structure itself, and can be used to compensate for the elastic deformation due to permanent loads as well as creep and shrinkage of the concrete.

CEMENTS FOR OIL-WELLS

Cements for which there is little, if indeed any, application in this country are the so-called "oil-well cements," but contractors on oil development projects over-





A SPORTS GROUND STAND IN YUGOSLAVIA. This stand, built since the war at the sports ground at Saraj, a short distance outside Skopje, in the Macedonian region of Yugoslavia, shows the traditional Byzantine principle of contrasting brickwork courses with local stone used imaginatively in a modern form. This time the contrast is between stone and concrete. Equally attractive back and front, extreme lightness and airiness is effectively used to combat the fierce heat and sun of the Macedonian summer.

seas may find uses for them. These cements are used for grouting the casing of the oil-well to the side of the bored hole in order to stabilise the casing, and to form a seal so that water or gases cannot flow from the strata in which they are contained to the oil-bearing strata, thus contaminating the oil.

Wells have been drilled to 20,000 ft. or more, where the temperature of the earth may be from 300° to 400° F. The pressure which may be exerted on such a column of cement grout after it has been placed may reach 18,000 lb. per square inch. Cements for use in these conditions have been developed, mostly by oil companies in the USA, and the American Petroleum Institute has published specifications of the tests to which such cements should be subjected before acceptance. Essentially, the problem is to produce a cement which will remain fluid in the form of a slurry for several hours under the influence of high pressures and high temperatures. Two main methods have been adopted; one is to use a cement similar to normal Portland cement, but in which the proportions of the chemical constituents have been varied, the other method is to add a retarding agent to the clinker before grinding. Generally both types of cements are ground less finely than the cements used in building work.

QUICK SETTING AND RAPID HARDENING CEMENTS

Three cements useful in everyday work in this country are high-early-strength cement, sulphate-resisting Portland cement, and masonry cement. Possibly the most well-known high-early-strength cement is one in which a small amount of calcium chloride is ground with the clinker. The cement is quick setting and concrete made with it should be placed within 20 minutes of being mixed. It is stated that the compressive strength of 6-in. cubes made of a 1:2:4 mixture containing such cement is about 1,900 lb. per sq. in. at an age of 24 hours, compared with a strength of about 550 lb. per sq. in. for similar cubes of concrete made with normal Portland cement. High-early-strength concrete used in roads allows the roads to be opened to light traffic within 24 hours, and, for example, when such concrete is used for suspended slabs the shutters may often be removed after a day if the spans are not great. A further advantage of the cement in work carried out during the winter is that it generates heat more rapidly during setting and hardening than does normal Portland cement, and thus the period during which the concrete is susceptible to damage by frost is reduced.

SULPHATE-RESISTING CEMENT

In many parts of the country the ground water and certain soils contain sulphates which are liable to cause disintegration of concrete made with normal Portland cement. In such cases it has generally been necessary to use a high-alumina cement, but recently a sulphate-resisting Portland cement has been introduced. This cement, which complies with the requirements of the British Standard for Portland cement, is so constituted that the chemical compound, found in all Portland cements, which reacts with the sulphates in the surrounding medium is reduced to a minimum. If normal precautions are taken to produce a good dense concrete it is claimed that with the use of this cement the concrete will resist concentrations of sulphates in solution (in terms of sulphur trioxide) of up to 500 parts per 100,000.

MORTARS

The traditional material used for mortars for brickwork and masonry is lime, but cement has been used to an increasing extent in modern times. Although cement mortars have a greater strength than lime mortars they have certain disadvantages in that they are harsh, and though strong in themselves often fail to adhere to certain types of bricks, while cracks are frequently formed in the joints, and sometimes in the bricks or masonry, by their shrinkage on setting. To overcome these disadvantages special masonry cements have been developed of which at least one type is available in Great Britain while there are many commercially prepared in the USA.

These cements are generally a mixture of ordinary Portland cement and one of the following: Hydrated lime, a small amount of calcium or aluminium stearate, granulated slag, or similar materials. Granulated blast-furnace slag mixed with hydrated lime has often been used.

IMPERMEABILITY

Waterproofed cements are generally normal Portland cements to which has been added a non-saponifiable oil or a metal stearate. It is claimed that with these cements a more impermeable concrete may be obtained than with ordinary cements, and while these claims are difficult satisfactorily to substantiate by laboratory tests the value of such cements is widely admitted in practice.

Hydrophobic cements are cements with which have been ground a water-repellent material so that each separate particle of cement is covered with a moisture-resistant coating. During the mixing of the concrete abrasion with the aggregates removes the coating and the cement acts as an ordinary Portland cement. The value of this cement (which is believed to have been produced only experimentally) lies in the lower degree of protection against moisture that it requires during storage and the greater likelihood of its retaining its properties over a long period.

Cements are available in the USA in which air-entraining agents are interground with the clinker. Such cements are not yet available in this country, but the properties of concretes made with these cements are similar to those of normal Portland cement concretes to which the air-entraining agent is added during mixing. The value of these admixtures is discussed below.

Admixtures

Materials other than cement, aggregates, and water added to the concrete mixture are frequently referred to as admixtures or additives. Their uses are many, but generally may be included under one of the following headings: improvement of workability, increase of strength at an early age, increase of the period before setting commences, increased resistance to chemical or atmospheric attack, improved waterproofing qualities, and the production of special types of concrete such as lightweight concrete. Many of the materials used as admixtures have more than one effect on concrete.

AIR-ENTRAINING AGENTS

These were introduced in the USA about 15 years ago, largely as a means of increasing the durability of concrete road slabs subjected to freezing and thawing, and to improve their resistance to disintegration when common salt or calcium chloride was used for preventing the formation of ice on a road.

Experience has demonstrated the superior durability of air-entrained concrete as compared with ordinary concrete and it is widely used both for roads and for building construction in the USA, while its use is increasing rapidly on the Continent and in this country. It is also used to improve workability and is of considerable value in the manufacture of blocks in that it makes the concrete more plastic and less liable to damage when the blocks are handled in the " green " state.

The action of air-entrainment is complex, but very briefly the improved workability may be explained by the lubricating effect of the presence of a large number of tiny air bubbles in the mixture. One explanation for the increased resistance to repeated cycles of freezing and thawing is the " cushioning " effect of the air bubbles, that is to say as water in some of the minute voids expands on freezing the excess water is forced into adjacent air bubbles thus preventing the building up of an hydraulic pressure which would disrupt the concrete.

These admixtures have an adverse effect on strength, but in the amounts generally used the decrease in strength is about proportional to the amount of air entrained, that is less than 10 per cent. Commercially available air-entraining agents include natural wood resins, soluble salts of wood resins, and certain fats and oils. These are added to the materials just before mixing, but as previously stated Portland cements containing an integral air-entraining agent are available in the USA.

Much larger quantities of these agents than are normally used may be employed in the manufacture of cellular lightweight concretes, and densities as low as 30 lb. to 35 lb. per cu. ft. have been obtained.

PULVERISED FUEL-ASH

This is a waste product (known in the USA as " fly-ash ") produced as the residue from the burning of powdered coal in power stations. The material is of about the same fineness as Portland cement and consists principally of the oxides of silicon, aluminium and iron, with some carbon. The silica can combine with the lime in hydrated cement to form cementitious compounds as with other pozzolanic materials. The particles of ash are spherical in shape and when added to a concrete mixture may increase its workability. The amount of combustible material present may be from three per cent. to more than 12 per cent. In some circumstances this could be detrimental.

Pulverised fuel-ash is used either as a direct addition to the mixture or in place of part of the cement. Tests have shown that the compressive strengths, at an age of one year, of 1:2:4 concretes containing this admixture may be from 5,000 lb. to 5,700 lb. per sq. in. Where the ash

is used to replace some of the cement the strength at early ages may be much less than that of ordinary Portland cement concrete but, as is common with most cements, at the end of a year or so the strengths are comparable.

The chief use of pulverised fuel-ash would appear to be for concrete where a slow rate of hardening is immaterial and the consequent reduction in the heat of hydration is beneficial as, for example, in mass concrete walls. For concrete products subjected to low stresses replacement of some of the cement in the mixture by such a pozzolanic material may prove economical, but considering the cost of handling a bulky material and providing for the extra batching it is doubtful whether any appreciable reduction in cost would result from its use.

SOME OTHER AGENTS

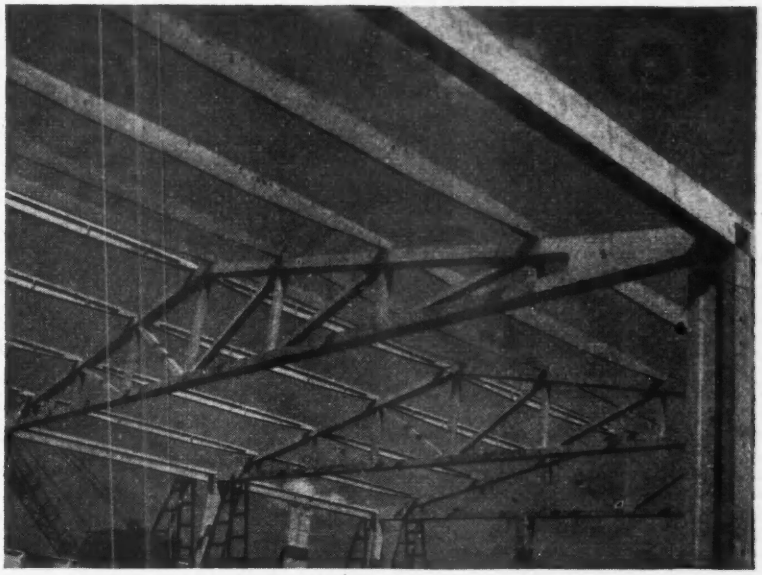
The most commonly used admixture for accelerating the hardening of concrete is calcium chloride. This should not be used in quantities exceeding two per cent. by weight of the cement used in a particular mixture. Increases of up to 1,000 lb. per sq. in. in compressive strength at seven days have been reported with the addition of this amount of calcium chloride. The drying shrinkage of concrete is increased by this admixture and there is some controversy as to its corrosive effect on reinforcement.

It should not be used with the high-early-strength cements in which calcium chloride is interground with the clinker otherwise a "flash-set" will result. One of its useful applications is in cold weather when the more rapid gain of strength and greater heat of hydration reduce the possibility of frost damage to the concrete.

Materials to increase the time before hardening commences are known as retarders and they may be used where placing conditions are difficult, or more generally in this country they are applied to the shutters to inhibit the setting of a surface layer of mortar so that it may be readily removed and thus expose the aggregate to produce a textural effect. Such additives are also used with "oil-well" cements previously mentioned. There is a large number of materials which can be used as retarders. Generally they are in one or other of the following groups: starches, sugars, and acids of the hydroxyl group; some of these are commercially prepared for use as retarders.

Lightweight concretes may be produced with the aid of a gas-forming admixture, such as aluminium powder which combines with the hydroxides in hydrating cement to produce minute bubbles of hydrogen gas throughout the mixture. Very small quantities of aluminium powder are used (about ¼ lb. per bag of cement) and it is possible to produce concretes with a very wide range of densities. Zinc and magnesium powders have also been used.

Another method is to produce a stabilised foam which is added to the mixture in place of some or all of the aggregate. Foam of this nature can be produced from hydrolised waste protein. Concrete weighing as little as 20 lb. per cu. ft. may be produced in this way. Hardening of the concrete and reduction of shrinkage may be materially assisted by autoclave curing. Pulverised fuel-ash has been used with cement and a gas-forming agent for such products.



The roof trusses and purlins in position.

PRECAST CONCRETE WORKSHOP AT BERMONDSEY

Prestressing System Used in Trusses and Purlins

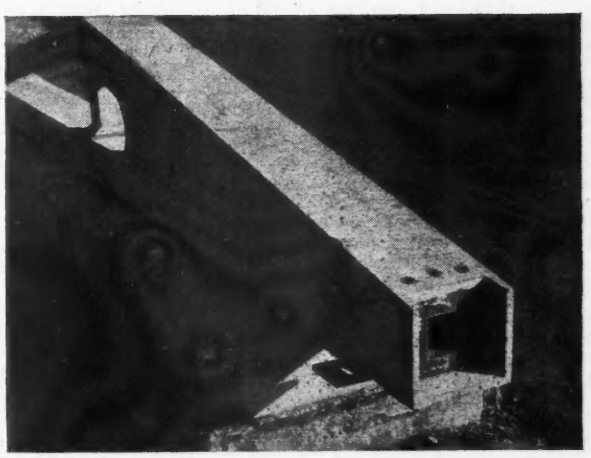
A NEW WORKSHOP has been erected at the Bermondsey premises of the Liverpool Artificial Stone Co., Ltd., which makes use both of units cast from standard moulds and of prestressing in its construction.

The workshop is 75 ft. long by 45 ft. wide. Its frame consists of precast, prestressed concrete trusses supported on columns at 15 ft. centres. Precast prestressed concrete purlins carry the asbestos-cement roofing. The Gifford-Udall-CCL prestressing system was used in both the trusses and the purlins. The 45-ft. trusses are each made up of fifteen precast units. Some of the units were cast as separate triangles of different sizes, each including a section of the bottom boom, an upright and a raker. The top boom was precast in short, straight lengths which extend from one upright to the next. The centre upright was also precast as a separate unit. Caulked mortar joints were made between all the units, which were then stressed together with a cable passing through a duct in the bottom boom and anchored in precast end blocks.

The precast purlins, which have a "fish-bellied" profile, were post-tensioned with wires passing along a groove formed in the bottom of the web. After stressing was completed, the groove was filled with cement mortar.

The supporting columns for this workshop were of precast, reinforced concrete. In situ reinforced or prestressed concrete columns or brick piers can be used. The standard units can be combined to cover any span from 16 ft. to 45 ft. For shorter spans than 45 ft. the same profile of the truss is maintained, but the length of the end blocks and the height of the centre upright are varied, and certain of the larger triangular units can be omitted. The trusses are designed to carry asbestos-cement sheets or wood-wool slabs.

The precast units were manufactured by the Liverpool Artificial Stone Co., Ltd., who also constructed the workshop. The consulting engineer was E. W. H. Gifford, BSc.



An end anchorage block of a roof truss. A cable stressing the truss units together passes through a duct in the bottom boom.

Building in Singapore

A TALK AT THE ARCHITECTURAL ASSOCIATION

ON December 8, at an informal meeting of the Architectural Association, held at 36, Bedford-square, WC1, MR. T. H. H. HANCOCK, ARIBA, MTPI, gave a historical review of building in Singapore. Che Othman, Commissioner for Malaya in the United Kingdom, was among those who were in the audience. Mr. S. E. T. Cusdin introduced the lecturer to the meeting.

Mr. Hancock said Singapore was a small island near the Equator. The average day temperature was about 85° F. In buildings which absorbed a lot of heat during the day, and were not well ventilated, temperatures might not fall much below this during the night; but on clear nights, during heavy rains, temperatures in well-ventilated buildings might drop to the low seventies. High humidity and vapour pressures made conditions more unpleasant than was the case with higher temperatures in a dry climate. Frequent torrential rains necessitated protection against flooding and moisture penetration. The architect must provide for this and against the brightness and glare of sun and sky.

The population of Singapore was almost 1,200,000, of whom more than 800,000 lived in the city. More than three-quarters of these people were Chinese, but there were considerable groups from Malaya, India and Pakistan. Europeans numbered no more than 1.4 per cent. The people were mainly segregated into racial groups, each living in its own quarter of the city and having its own style of architecture. Consequently, besides Christian churches, Protestant, Roman Catholic and Armenian, there were Moslem mosques and Indian and Chinese temples.

EARLY ARCHITECTS

At its founding by Sir Stamford Raffles Singapore had been leased from its Malay ruler, the Sultan, in 1819 and ceded in full sovereignty to the East India Company in 1824. The earliest British architects carried the Georgian-Palladian manner there, modifying the style to suit the climatic conditions. Much of their work had considerable charm, and the preservation of the most interesting of their buildings was now one of the objects of a Singapore Government committee. For many years convicts from India and other Eastern dependencies had been employed under efficient and sympathetic management doing good work, enabling the provision of public buildings and churches which could not otherwise have been erected. By 1849, working with European tools and methods, their craftsmanship was such that no Chinese carpenters could equal it. Convict labour was abolished in 1873.

Mr. Hancock described and illustrated a great number of buildings; ecclesiastical, governmental, commercial and domestic. By 1870, he said, a general decline in design and taste had set in. Large, pretentious, pompous commercial buildings were characteristic of that period: they were costly, but often crude in comparison with earlier work. Later came a period of Imperial classic building and later still a functional style gradually emerged. A remarkable feature of architectural development in Singapore was the fact that, although successive generations had imported varying styles of architectural expression, in nearly all cases there had been a skilful adaptation to the Malayan climate.

POST-WAR REVIVAL

The second world war with the occupation of Singapore by the Japanese had stopped every form of building, but there had been a revival since. Among other examples of architecture illustrating contemporary trends, Mr. Hancock mentioned a nine-storey block of flats by the Singapore Improvement Trust. The building was completed in 1952. It was of reinforced concrete frame throughout with brick and block panel walls, supported on 50- to 75-foot precast concrete piles. Another example was a new nurses' home for 250 probationary nurses designed by the Chief Architect, Public Works Department. Here three five-storeyed wings enclosed a rectangular court, while a two-storeyed wing contained a dining-room, recreation room, kitchen, etc.

Another interesting work was the total conversion and reconstruction of an old Court House. This had been built in 1827, had been extended at various times, and was now used to house the Legislative Assembly and the Public Relations office of the Government. Other buildings included that of the Bank of China, fourteen storeys high, and the new Asia Insurance building, eighteen storeys and, in part, twenty storeys high. This was the tallest building yet erected in Singapore. It stood on 28 caisson foundations of from 67 to 80 feet depth.

The first multi-storeyed development in Singapore after the war was MacDonald House, built for the Hong Kong and Shanghai Banking Corporation. This had precast reinforced concrete pile foundations with supplementary extension units lowered into pre-driven tubes. For this, 263 piles were driven in forty-one groups. The structure of this eight-storey building was a reinforced concrete frame with flat slab construction for the office floors.

HOUSING PROGRESS

Of housing Mr. Hancock said that prior to the war the Improvement Trust had constructed 2,049 housing units and fifty-four shops. After the war building had recommenced in 1947, and pioneer work had been done in precast post and panel construction of the most economical type. In 1948 a plant had been set up in Singapore for the production of a light-weight concrete obtained by means of a proprietary expander. The Trust, considering that the use of this material might produce a notable saving in costs, engaged in research. As a result, buildings three and four storeys high were produced, using light-weight hollow blocks throughout with an integral reinforced concrete frame inside the cavity. This largely eliminated shuttering. From 1949 to 1952 the majority of Trust flats had been built by this method.

The development of flats with load-bearing hollow block walls had become possible in Singapore during 1952. Then machines were imported capable of producing compressed and vibrated blocks to the standard required by the British Code of Practice. At present the maximum height of such flats was three storeys. Floors were of reinforced concrete. Precast beams, hollow tile slabs and solid slabs were used.

Drastic reductions were made in space standards and finishings, and by the end of 1953 the Trust had constructed a total of 9,661 housing units and 451 shops. In addition there were 1,544 housing units and ten shops under construction, and this year two further programmes for 3,571 housing units and forty-two shops were proceeding. But it was doubtful whether the building industry, as at present organised in Singapore, was capable of carrying out all the work necessary to make real headway into the problem of housing there, and the whole position of building resources—finance, shortage of labour and difficulties in obtaining adequate supplies of materials—was now being investigated.

ART MOVEMENT

In Singapore the prime object of design was to provide free air movement. Comparatively thin but wide-fronted buildings with through ventilation were the best. The architect in Singapore had to provide protection from the sun, from the copious rainfall and from the glare of the tropical sky. Buildings should therefore be as open as possible and planned in one-room thickness An admirable model was provided by the traditional Malay house with its low-eaved verandas, back and front, giving protection against sky glare, sun and rain. Such houses were planned in single-room thickness and were generally raised on stilts. Thus they had complete ventilation and were protected from flooding and white ant infestation.

Canopies and hoods, louvred windows and openings permitted windows to be kept open for ventilation when it was raining; but additional protection was necessary against the glare of the sky. This was provided by split bamboo blinds or chicks, often used with venetian shutters. The control of glare was more important than the provision of shade from sunlight. Screening of openings might make rooms too dark when the sky was heavily overcast. This could be overcome by keeping rooms, say, not more than 18 ft. deep; as was the case with the new plans for multi-storeyed office buildings.

Over 140 lantern slides were used to illustrate the lecture. Showing the last of these, the design of the new University of Malaya group of buildings, Mr. Hancock said he believed this conception of a civic group of buildings showed a new approach to the design requirements of large buildings for the warm, humid tropics and would set new standards.

A vote of thanks was passed to Mr. Hancock.

INDUSTRIAL MANAGEMENT

During the Michaelmas term of 1953, the United Steel Companies, Ltd., were invited to provide a panel of speakers for the Faculty Board of Engineering at Cambridge University. The subject was "Industrial Management," and lectures on various aspects were given over a period of seven weeks by senior members of the company. These lectures have now been reprinted in book form, available from the company's offices at 17, Westbourne-road, Sheffield 10.

BAILEY-STRATTON PERMANENT HOUSE, FOLLYGATE, DEVON

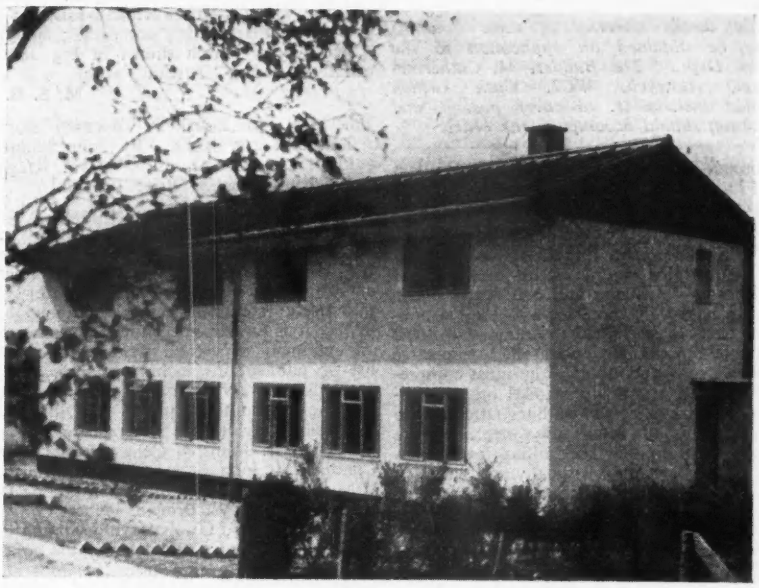
SOME 15 months ago, Mr. Leslie Bailey, the Engineer and Surveyor to the Okehampton Rural District Council, aroused wide interest with his £650 Bailey-Stratton bungalow—or "Half Price House" as it became popularly known. At that time, Mr. Bailey stated that plans were almost complete for a full-sized three-bedroomed house which he estimated would cost £850, and a pair of these houses have now been completed by his council where the basic cost under contract has in fact been £860 each.

As in the case of the bungalows, the houses have received the full approval of the Ministry of Housing and Local Government as conforming to the required standards, and they rank for full Government subsidy and loan sanction period of 60 years similar to other permanent dwellings, and the Okehampton RDC now have a further 16 under construction. The importance of this low cost is that it has been achieved without lowering the standards of accommodation or amenity, and in fact the designer claims that certain standards are considered to be higher than usual for council housing schemes, quoting room heights of 8 ft. and the provision of wc's on each floor as examples.

The house contains three bedrooms, living-room, kitchen, pantry, combined bath/wc on the ground floor and separate wc on first floor, together with the general arrangements for linen cupboard, sink unit, etc., while the general provision includes for electric lighting throughout with power points to all rooms except the smallest bedroom. Hot and cold water services are provided; "Surfex" plastic flooring is installed over the whole of the ground floor, and the scheme is complete with decorations including enamelled woodwork and papered walls.

In the case of the prototype house, both cooking and water heating are undertaken by an Alico No. 89 combination range, but of the 16 subsequently building there are alternatives comprising (*a*) back-to-back ranges providing an open fire to the living-room with the oven to the kitchen side, and (*b*) an open fire to the living-room with an electric cooker to the kitchen. The basic price of £860 included 25 ft. connections to sewerage and water supply.

The external design follows the lines of the Bailey-Stratton bungalow, having 2 ft. wide overhanging eaves, but now set at a slight angle to the wall face, giving added emphasis to the rather continental appearance. Mr. Bailey points out that his house is in no way prefabricated, but that the system he has produced may equally be employed to buildings of any design, the constructional system being concerned with the building of interior walls and partitions, and embracing interior services, thus allowing for full and individual architectural expression.



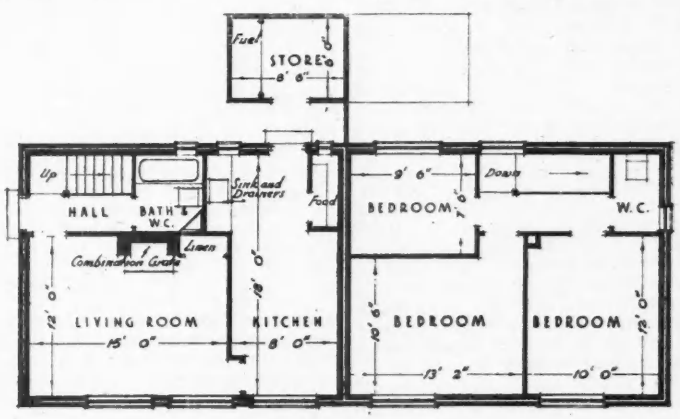
A pair of Bailey-Stratton houses.

The pair here illustrated are situated at Follygate, near Okehampton, on a site some 800 ft. above sea level and in a very exposed position. The walls are of concrete blocks, rendered on the external face with Tyrolean stucco, but the houses in the council's present programme are variously faced in brickwork or contain brick features with part stucco rendering.

The walls are cavity constructed using a normal 2 in. cavity between the outer and inner wall leaves with galvanised wall ties across the cavity. The inner walls and the partitions are of approximately 5 in. overall thickness including plasterboard linings, and the cavity walls are, therefore, from 10 in. to 11½ in. thick according to the material chosen for external walls.

The Bailey-Stratton system, or "constructive process" as it is termed, provides for inner walls and partitions to be built to a distributive load-bearing assembly on the principle of horizontally placed stabilisers combined with vertical courses at angles, quoins and inter-sections, the arrangement being inversely produced to the main wall and partition areas. The economy is mainly due to the savings on labour, arising not only from the actual wall construction but from the influence on and relations to subsequent services and processes. The system permits simultaneous operations by the various trades.

The contractors for the houses shown were Messrs. J. L. Richards and Son, Ltd., of Bere Alston, Devon. Following is a list of sub-contractors and suppliers:—Flooring, Surfex Flooring Co., Camberley, Surrey; electrical harness, S. T. Street, Okehampton, Devon; paint and special finishes, A. T. Morse, Sons and Co., Ltd.



GROUND FLOOR FIRST FLOOR

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BOOKS

Books reviewed in these columns may be obtained on application to the Book Dept., "The Builder," 4, Catherine-street, Aldwych, WC2. Cash (which should include 1s. to cover postage and packing) should accompany the order.

MODERN PRACTICAL BRICKWORK. By William Frost and R. V. Boughton. Pp. xiv, 400. Illustrated. (B. T. Batsford, Ltd.) Price 50s.

THIS handsomely produced and lavishly illustrated volume is the joint work of a master-craftsman and an experienced builder, both of whom have taken a prominent part in technical training and have published textbooks under their respective names. It is undoubtedly the most comprehensive and up-to-date manual on the subject. Instances of the authors' attention to small points of detail often neglected are to be seen in their meticulous instructions for the secure fixing, vertically and laterally, of non-load-bearing partitions—a frequent cause of trouble; on the proper method of laying slate and lead damping proof courses; on the use of corbels of brick and iron; and on all the little problems connected with cavity-walls, including the proper ventilation of the cavity itself and the bearing for first-floor joists.

No praise can be too high for the 1,000 illustrations, drawn with the assistance of Mr. J. V. Sibley; and there are also many good photographs of processes, details, fireplaces, and modern examples of brick architecture. Of nearly 400 pages of text and illustrations, approximately 50 are devoted to materials and tools, and about 250 to technique, the remainder being concerned with by-laws, measurement, estimating, scaffolding, and an excellent index. Fireplaces and flues alone occupy 70 pages. The chapter on bonding contains all the usual types: also Rat-trap, Dutch, Monk, and Rhom bonds—the last-named receiving a disproportionate amount of attention. Foundations and the timbering of trenches are well treated according to the latest practice. The chapters dealing with arches, lintels, copings, jointing, pointing, scaffolding, measurement and estimating are all satisfactory; and the long chapter on the 1953 by-laws (34 pages) is presumably necessary. The short chapter on the arrangement and equipment of a department for the teaching of brickwork, interesting as it is in itself, is perhaps justified because it will be useful to instructors, if not to the ordinary apprentice or craftsman.

From the point of view of readers of the latter type, parts of the book (besides the chapter on by-laws already mentioned) are rather heavy going: eg, the passages on the proportioning of mortar, and on slenderness-ratios for load-bearing partitions, where we are told (p. 250) that the LCC by-laws insist that "the thickness of a wall shall be not less than 16 times the storey height." Much of the text is prolix and wordy: by simplifying descriptions of processes, space could be found to explain what are the properties of brick-earths; where and how brick-earths are obtained; why some bricks weather badly; why some are not weatherproof; and what are their strengths in compression. The word "efflorescence" does not appear at all; and the scourge of dry-rot should have been mentioned as a chief reason for inserting air-bricks to ventilate floor-timbers. The book as a whole is so good that these omissions, surely of interest to a "practical" bricklayer, should be rectified in a later edition. There is an unfortunate misprint on p. 88, "compart" for "compact"; and the "Semi-Gothic" arch shown in Fig 380 is usually called a "Tuscan" arch.

M. S. B.

THE SMALLEST ROOM: A DISCREET STUDY THROUGH THE AGES. By John Pudney. Pp. 151. Decorations by David Knight. (Michael Joseph.) Price 10s. 6d.

THE TITLE of this volume may have a meaning for some people; to others it will not immediately reveal itself as a euphemism for a water-closet—just that. One might expect here to find a technical history of that useful contrivance in a building; but in fact it is an extremely facetious essay by an extremely competent writer whose long list of publications includes fiction, poetry and history. With loving and assiduous care he has hunted through the Old Testament and the works of Shakespeare, Horace Walpole, Dr. Johnson, Celia Fiennes, Lord Chesterfield, John Stow, Charles Waterton, Creevey, Pepys, and Saint-Simon among the classics, and D. W. Brogan, Robert Graves, H. W. Harris and Gwen Raverat among the moderns for every single mention of a bodily function and a piece of apparatus which the Victorians, at least, regarded as unmentionable. It is perfectly true that the Victorians do provide, in this case, a "sitting target" (in the most precise sense) for the mischievous darts of their grandsons; but jeers at their taboos do wear somewhat thin after a score of pages enumerating alternative euphemisms derived from nearly all countries and all periods back to Methuselah or thereabouts.

Many of the curious words and phrases that the author has culled for his anthology will be novel to his readers, but was it really worth while? The misadventures of sundry kings, queens and statesmen in "the smallest room" are related with gusto; and the conveniences in Westminster Abbey for the Coronation in 1953 afford ample scope for his wit, as one of Her Majesty's guests. Some of the slang terms that he has discovered are peculiar to various public schools, duly mentioned by name; and the whole idea of the book, cleverly written though it is, seems rather "Third Form."

As for providing a useful history of sanitation, there are certainly a good many relevant quotations from Salzman's fine book on *Building in England*, there is a long and revolting account of nineteenth-century privies in our industrial towns, but the final chapter on Sir John Harington (who invented the first English water-closet just before 1600), while telling us a good deal about that worthy's political and social doings, says little that is technical about his masterpiece, though the poetry that he wrote about it may be judged amusing. We must have water-closets, there is no need to ignore them or call them "lavatories" or queer slang names, but as material for a joke those who have reached the Fourth Form may find this book less funny than its author intends.

M. S. B.

ARCHITECTURAL HYGIENE, OR SANITARY SCIENCE AS APPLIED TO BUILDINGS (9th edition). By Sir Banister Fletcher and H. Phillips Fletcher. Pp. xiv, 394. Illustrated. (Sir Isaac Pitman and Sons, Ltd.) Price, 25s.

THE LATE Sir Banister Fletcher became justly famous for his *History of Architecture*, but it has never been made clear to what extent the original scheme of that work was due to his father, the professor of the same name. Similarly, the smaller book now under review was a joint effort by Sir Banister and his brother, who must have had a considerable share in its writing. However that may be, it now appears in a ninth edition after 50 years of life under two successive publishers. The preface is dated by Sir Banister in April, 1953, only four months before his death at the age of 87; so the real credit for the thorough revision that the book has undergone must evidently be ascribed to his partner, Mr. Herbert Tilley, whose "valuable help" is mentioned in the preface. The total length of the book has been increased by 23 pages, and about a score of the illustrations are new.

The principal additions to the text deal with water-supply in London, the Model By-laws of 1953, the Town and Country Planning Act of 1947, hot-water heating, internal wall finishes, dry-rot, copper and zinc roofing, the 1950 Report on Water Pipes, recent research in heating and ventilating, ceiling switches, fluorescent lamps, and electric-wiring systems. Shorter additions cover composite plumbing units, the saturation of walls, cement renderings, shrinkage of floor concrete, pipe ducts, and many other items; also a brief bibliography at the end of each chapter. Some of the chapters remain almost unaltered since the 1947 (8th) edition, including those dealing with sites, drainage, ventilation, and sanitary inspection.

Plans of some modern hospitals have been inserted; but the war-stricken Carpenters' Hall still figures as an example of "recent" relighting and reheating; and the Victorian country house upon which a typical sanitary report is based contains 19 bedrooms as well as "the usual trimmings," which involve a butler and a "boots." Yet perhaps that comment is hardly fair: such Victorian and Edwardian survivals are common enough; and they do frequently entail a drastic sanitary survey by an architect. On the whole, Mr. Tilley has fulfilled his difficult task admirably, and has made the book comprehensive and up-to-date.

M. S. B.

BOOKS RECEIVED

CRUCK-FRAMED BUILDINGS OF LEICESTERSHIRE. By V. R. Webster. (Leicester: Leicestershire Archaeological Society.) Price 6s.

THE INSTALLATION OF ELECTRICITY IN CHURCHES. (London: The Church Information Board.) Price 1s.

IAAS JUNIOR SECTION

THE junior members' section of the Incorporated Association of Architects and Surveyors has been reorganised on a new basis. Formerly the section embraced only students and non-qualified grades. As rearranged the section will include, in addition, qualified members up to and including 30 years of age, it being felt that by his presence in a junior organisation the younger qualified practitioner may lend considerable help to those who are in the process of qualification.

A programme is in course of preparation for an extension of the activities of this section to cover both social and educational aspects and it is also proposed that the section shall be subdivided into the branches of architecture and surveying, which at present mark the main organisation, and that branch committees in each section shall be formed.

The New Planning Act

VALUATION FOR COMPENSATION PURPOSES

THE main principles of the new Town and Country Planning Act, 1954, and its methods of valuation for the payment of compensation under the various Parts, were outlined in a paper entitled "Valuations under the Town and Country Planning Act, 1954" read by MR. T. J. NARDECCHIA, FRICS, FAI, at a meeting on January 3 of the Royal Institution of Chartered Surveyors. Several observations on the effectiveness of the new Act were passed by Mr. Nardecchia, and extracts from his address are given below:—

The principles underlying this Act are in themselves difficult to stomach, but the greatest difficulties will arise in the practical application of those principles, and the valuations which are required under the Act will be anomalous and complex in many cases. Moreover, the Act is based upon certain assumptions which appear to be of a fallacious character, and one of the more important assumptions made is, that for all practical purposes, the claims submitted and settled under Part VI of the Act of 1947 represent the development value subsisting in land and buildings throughout the country on the level of 1947 prices. The Government have decided that the future system of compensation payments for development value must be based upon these claims, and they have not been prepared to permit the re-opening of the assessment of claims, nor have they permitted the making of any new claims by persons who omitted to do so under the 1947 Act.

The broad principle underlying the Act is that, instead of paying out the global fund to satisfy claims made upon it to the extent of the moneys available, claims will be paid in full only as and when circumstances arise which entitle the owner of the land to receive compensation for loss of development value.

In order to operate this scheme a fundamental change has had to be made as to the ownership of claims, and it is now provided that every claim for loss of development value which is deemed to remain at the commencement of this Act shall inure to the benefit of the land to which it relates instead of remaining the personal property of the owner of the claim. It is thus necessary, as a first step under the 1954 Act, to bring together the ownership of interests in land and the ownership of any claim or claims relating to that land, and to disentangle all the past transactions which may have taken place and which have had the effect of divorcing the ownership of interests in land from the ownership of claims.

LOSS OF DEVELOPMENT VALUE

Parts I and V of the 1954 Act make provision for the payment of compensation for loss of development value to holders of claims who have already been affected by certain eventualities which have taken place, broadly speaking, between August 6, 1947, and the date of the commencement of the 1944 Act. The payments made under Part I and Part V of this Act will have the effect of extinguishing or reducing the amounts of the claims for loss of development value to which they relate. After these payments have been made the unexhausted amounts of claims for loss of development value, if any, will be increased by one-seventh as a supplement in lieu of interest and then registered to the benefit of the land. They will then be kept available for future payments of compensation to persons having interests in that land at the time of any events occurring after January 1, 1955, which entitle them to compensation for loss of development value. If any development is permitted on the land, the value of the original balance of established development value is to be written down by the value of the development, ascertained in accordance with the Fourth Schedule. The provision applies also to new development carried out after July 1, 1948, in certain cases.

Compensation for loss of development value will, henceforward, be paid only in respect of two main classes of events, namely compensation for planning restrictions, including the refusal of consent and the revocation or modification of planning consent, and compensation on compulsory purchase.

In general, any person who applies for permission to carry out new development on land whose application is refused or is only granted subject to very onerous conditions, will be entitled to claim compensation under Part II of the Act to the extent of the depreciation in the value of his interest in the land up to the amount of the unexpended balance of established development value which is attached to the benefit of that land. This phrase is one which the unrepentant surveyor has quickly shortened into the expression the "unexpended B.E.D. or bed value," and it means the total of all Part VI claims under the 1947 Act which remain available to the benefit of the land after any reductions have been made under Parts I and V of the 1954 Act.

New development means any development other than that of a class specified in the Third Schedule of the 1947 Act, and this right to compensation applies to all planning decisions given after the date of the commencement of the Act. The general principle as to compensation is, however, modified almost out of existence by a large number of exclusions set out in Section 20, namely cases where the planning authority are entitled to refuse permission for new development, or may attach conditions to the grant of planning consent without incurring a liability for the payment of compensation.

Where consent is refused on the grounds that the application is premature, provision is made for compensation to be paid after the lapse of seven years if planning consent can still not be given for the development on the grounds on which it was previously refused.

In addition to the exclusion of compensation for the outright refusal of planning permission, it is also provided that no compensation will be paid for the imposition of certain planning conditions on the grant of a consent to develop land. These conditions are those set out in sub-section 2.

It is further provided by Section 21 that no compensation will be payable for refusal of planning permission if an undertaking is given that consent would be granted for other development of a residential, commercial or industrial character, which consists wholly or mainly of the construction of houses, flats, shops or office premises, or industrial buildings (including warehouses), or any combination thereof.

To take the effect of this provision to absurdity, assume that application is made to erect an office building on a vacant site in the heart of the City of London. The planning authority would have power, it seems, to refuse permission for the erection of the office block but to endeavour to avoid the payment of compensation for this refusal by undertaking to grant permission for the erection of a pair of semi-detached houses on the site. It is, of course, very unlikely that any such glaring case would ever arise, but the principle is there and will occur in cases likely to arise in practice.

Where an owner applies for permission to change the use of a property from, say, residential purposes to industrial use, no compensation will be payable for refusal of permission, even though there is a claim for loss of development value registered to the benefit of that land, which was arrived at on the basis of such a change of use.

COMPULSORY ACQUISITION

Compensation for the compulsory acquisition of land is dealt with in Part III of the Act, which applies to all notices to treat served after the commencement of the Act. Compensation will be paid as the sum of two amounts:—

1. The existing use value of the interest in the land being acquired, and

2. The appropriate amount of any unexpended balance of established development value which is attributable to the land.

It follows that on compulsory purchase every person who is entitled to a sufficient interest in the land will be able to claim first on the basis of the loss of value on an existing use basis, as is the case at present, but in addition he will be entitled to claim the whole or a share of any outstanding claims which are held to the benefit of the land, unless his interest in the land is held on such terms as to prohibit him from carrying out any new development to the relevant land (and, consequently, where his interest possesses no development value).

In addition to the payments which can be claimed under Part I of the Act, payments can also be recovered under Part V for past planning decisions and past orders revoking or modifying planning permissions. In order to obtain compensation under Part V the land must have been affected either by—

(*a*) a planning decision made before the commencement of this Act, under which new development was refused or granted subject to onerous conditions; or

(*b*) orders have been made before the commencement of this Act under Section 21 of the principal Act, whereby permission for the carrying out of new development was revoked or modified.

It is necessary to show that a claim holding exists in respect of the land and that the planning decision or order affects the area or part of the area of a claim holding, and it is also necessary to show that the claim holding was still subsisting at the date of the commencement of the Act (*i.e.* it has not been extinguished under Part I).

CONCLUSION

These thoughts on the Act are advanced with considerable diffidence, not only because of the involved nature of the subject matter, but because of the very short time available for the preparation of this Paper. It was originally thought that the Act would have been passed in October but owing to the large number of amendments in the passage of the Bill through Parliament it was not passed until November 25 and the Stationery Office were unable to provide any copies of the Act until December 8.

It will, I think, readily be appreciated that under this Act hundreds of different problems will arise in practice which cannot possibly be covered in a paper of this kind. This Act is abstruse in the extreme and one cannot help feeling that it contains within itself the seeds of its own destruction and personally I regard it as an impracticable measure which is bound to be repealed or drastically modified in due course.

My friends have asked me on a number of occasions whether there is any reasonably simple formula which is of assistance in dealing with the practical problems under this Act. There are a number of formulæ but there is one which I have found of the greatest assistance in grappling with this Act and if it is of any use I am happy to give you the details now. The formula consists of one-third gin, one-third French vermouth and one-third Italian vermouth.

SPRINGS FOR SASH WINDOWS

A New Dutch Development

TO FACILITATE the opening and closing of sash windows, a Dutch firm—De Vries and Co.'s Ijzerhandel NV, of Amsterdam —has developed a new spring device which consists of a telescoping, revolving tube, fitted on the outside with a screw spring and on the inside with a torsion spring. Each spring can slide along the tube without damaging the other, giving a smooth movement to the sash window.

Since the tube bears the weight of the window the springs are kept flexible so that they can be given a larger number of turns in order to increase their pulling power. The presence of the tube prevents buckling of the springs.

For heavy sash windows a special tension mechanism has been constructed with a handle. A movement of the handle in one direction causes the window to be automatically drawn upwards by the spring, after which it can be easily secured by hand. A movement of the handle in the other direction produces an opposite effect and the window begins to fall on its own accord.

Such springs are being made for pay-windows, drop doors up to 1,400 lb. in weight, acid cupboards for laboratories, kiosks, kitchen lifts and serving hatches. For acid cupboards, chromium-plated outer telescopic tubes are provided. A patent has been applied for in various countries.

DIFFERENTIAL RENT SCHEMES FOR MUNICIPAL HOUSING

[*By a Legal Correspondent*]

WITH the end of licensing and the increased numbers of houses for sale some local authorities have taken the view that those of their tenants who could afford to do so should pay an economic rent for their houses, and not gain the advantage of subsidies from the rates. Initially, housing estates were built for the housing of the working classes, but this term was deleted in the Housing Act of 1949. Circular 90/49 suggested that local authorities should be able to ensure a proper balance in the development of their new estates, and to that end it was suggested that local authorities would be free to distribute the benefit of the subsidies in the manner they considered most appropriate. In practice rent equalisation schemes have been introduced based on standards of accommodation and amenity, and this has resulted in an increase in the rents of pre-war houses while the rents of post-war houses are in consequence lower than they would be if based on cost.

By S.83(1) of the Housing Act, 1936, the local authority may make such reasonable charges for the tenancy or occupation of the houses as they may determine and the 1st Schedule to the Housing Act, 1949, amending S.85(5) of the Housing Act, 1936, determines that the authority may grant to any tenant "such rebates from rent subject to such terms and conditions as they may think fit." Under S.85(6) they have a duty to review rents from time to time and also rebates if any.

LEGALITY CHALLENGED

The legality of a differential rent scheme was recently contested in the case of *Smith and Others* v. *Cardiff Corporation*, where it was claimed unsuccessfully on behalf of individual tenants that in the first place the Cardiff Corporation were acting *ultra vires* in formulating such a scheme, alternatively if they were not that the charges were not reasonable.

The proposals were that the following additional charges should be made to present rents: wives working, 2s. a week; each unmarried wage-earning child except the first, 2s. 6d. a week with a maximum of 5s.; tenants with an income of £500 a year but not exceeding £600, 8s. 6d. a week; and tenants with an income of over £600 a year, 12s. 6d. In the event of tenants failing to fill in the form required the council reserved the right to increase the rent by 12s. 6d. The maximum increase together with earlier charges should not exceed 12s. 6d. There was a discretion for the estates manager to waive the 2s. a week increase payable in the case of a working wife if she earned less than £2 a week.

Counsel for the plaintiff suggested that the scheme was unreasonable because many people would be unable to discover their rent at the material time at which it was payable. He thought that it was impossible to assess the rent because of the absence of definition of "family," that the scheme was arbitrary and capricious as between tenants and it involved certain classes of tenants subsidising other classes. It was suggested that S.85(6) of the Housing Act, 1936, only gave power to reduce the rent which the tenant had to pay, not to increase it.

Counsel for the defendant Corporation claimed that "reasonable charges" in section 83 of the 1936 Act meant financially reasonable charges for the tenancy. The test was whether a reasonable charge had been made for the house. It was a fallacy to assume that the existing rent was the full economic rent less subsidies and repairs. Mr. Justice Dankwerts, in giving judgment, said that he could not find anything in the Housing Acts which confined the Corporation's discrimination in matters of rebate and there was no objection to a rent which fluctuated according to events.

OTHER CONSIDERATIONS

Once it is established that the differential rent scheme is permitted by law, other considerations arise which a local authority should consider before increasing the rents of a section of its tenants. In the Finance Act, 1940, now replaced by S.172-177 of the Income Tax Act, 1952, the income tax authorities are enabled to collect excess rents over Schedule A assessment and this might result, subject to any right of set off, in part of any increase being handed over to the Government.

Again, S.130 of the Housing Act, 1936, and S.21(3) of the Housing (Financial and Miscellaneous Provisions) Act, 1946, provide for the disposal of any surplus in the housing revenue account. This is not allowed to go to the general rate fund but can, with the Minister's approval, be used to meet capital out of revenue, for recoupment or repayment to general rate fund of notional loan charges on housing capital expenditure which has been met initially out of the general rate fund.

But there is a provision that any surplus on the account shown on March 31, 1940, or at periods of five years, which is not required to recoup additional contributions may be transferred to the housing repairs account or carried forward. So far as not so applied the surplus is divided between the Minister and the local authority in proportion to the sums paid into the revenue account by each. Thus this year, if there is a balance in the housing revenue account which has not been satisfactorily disposed of, it may be for the major part transferred to the Minister.

From the point of view of local authorities, therefore, the present may not be an appropriate time to swell the housing revenue account, although the right to carry forward any balance appears to be a safeguard. The Minister does not appear up to the present to have exercised any powers he may have to "raid" the housing revenue account of a housing authority.

DEVELOPMENT PAYMENTS

Of interest to everyone who has a claim under the terms of the new Town and Country Planning Act, 1954, is the booklet "How to Claim Payments—A Guide for Owners of Land," published in question and answer form by HMSO, price 6d.

The Personal Factor in Accidents

A SERIES OF ACCIDENT PREVENTION GROUP TALKS

THE personal factor in accidents was the subject of a series of brief talks arranged by the London Building and Engineering Contractors' Accident Prevention Group and held at Birkbeck College, London, before Christmas. We give the following summary of the proceedings:—

The first speaker was PROFESSOR C. A. MACE, MA, DLitt, Head of the Department of Psychology, Birkbeck College, who said that he did not claim to be an expert in the field of accident prevention. He proposed to set out certain first principles and platitudes on the subject, and then call on his colleagues, who possibly had more experience of this particular aspect of psychological investigation, to give their views. He went on to say:—

There is no one basic cause for all accidents. In general, accidents are the result of a multitude of causes. Every accident involves the personal factor, but for every accident we have to take account of a very large number of factors contributing to it.

This is apt to be forgotten. Even the Medical Research Council's Emergency Report issued in 1942 on "The Personal Factor in Accidents" makes provision in its specimen record form only in one narrow column for showing the "cause" of the accident.

He suggested for consideration in connection with any accident that we ask ourselves "Who, by doing what, could have prevented this?" The answer will always show that you can never pin the responsibility on to one person. There are usually a number of persons in various positions who, by doing something, could have prevented it. He spoke of the importance of listing as large a number of causes as possible for any accident.

TAKING RISKS

People are more concerned about accidents to their fellow men than to themselves. In any ordinary situation, most of us will take risks that we would not let our wives and children take, and this applies also to our fellow workmen.

Professor Mace emphasised that it is a mistake to treat the accident problem as an isolated problem. He spoke of the possibility that good human relations within an organisation may help to reduce accidents. He also spoke of a human tendency to react in the opposite way to what might be expected. Drivers of cars have been recorded as speeding up on seeing the 30-mile limit sign—possibly because it reminds them that they have been dawdling and have an appointment to keep. Some methods adopted to reduce accidents might, in fact, increase them.

Professor Mace went on to speak of distinguishing between the local and temporary measures, and long-term measures, to prevent accidents.

In connection with care and attention, he spoke of:— (a) Controlling the attention of persons, and (b) providing safeguards that make it reasonably safe to be inattentive.

The psychological approach, which deals with the former, is not so concerned with temporary measures, or temporary propaganda, as with instilling the idea of safety into the individual himself. This calls for the right kind of training in safety at all stages—in school, in technical education, and in connection with any training schemes within the organisation where one may be working. Habit is one kind of safety which can be instilled into the individual. A sense of responsibility also comes in here. Responsibility for oneself, and for other people.

In connection with the *recording and reporting of accidents.* Professor Mace spoke of the effect on all concerned if a formal procedure is adopted for the reporting of accidents—as is done in the Services. A factual inquiry, with some such basis as, "Who, by doing what, could have prevented this?" can impress all concerned with the importance of the investigation. Any such inquiries must confine themselves to the facts and not be concerned with allocating blame. He suggested that senior personnel should concern themselves directly with such investigations, which should be followed up by reports showing that the accident would not have happened if certain persons (possibly including the management) had done certain things. This sort of procedure helps to build up a sense of responsibility.

Professor Mace concluded: There are a great many things to be discussed in connection with attention. The one thing that is certain is that no one can be accident-conscious all the time. We must all have occasions when our attention wanders.

TWO MAIN FACTORS

The next speaker, DR. MAY SMITH, OBE, MA, DSc, recalled her experiences from the time, during the first world war, when the Government of the day had to ask themselves "What is wrong?" "Why is the output of munitions decreasing?" "Why are accidents and injuries going up?" They didn't realise that you can't work human beings like machines for extremely long hours.

Dr. May Smith said that in all accidents there are two main factors. The person, and the machinery or tools. If anything goes wrong with either of them, you may have an accident. There is something that sets off the lot. The immediate cause, or act. It may appear completely impossible for the thing to go wrong, but still there may be something that is unsafe—as was shown in the case of the Comet disasters.

In connection with accident proneness, Dr. May Smith said that there are some people who will get an accident, no matter what happens. It is quite impossible to stop all the possible accidents, and there are some people who seem to be where the accidents are.

Another contributor to the discussion, MR. ALEC RODGER, MA, said that it was becoming evident that we do not know as much as we should about accidents. "Even some of the things that we thought we knew for certain are now questionable. We used to believe firmly that a majority of accidents of all sorts happened to a minority of the population. We continue to believe this, perhaps, but with less conviction.

"One of the troubles here has been our recognition of the fact that, while figures about major reportable accidents are on the whole fairly dependable, figures about minor accidents which need not be reported are not. We can easily be misled by them. The fact that most of the minor accidents, like most of the major ones, seem to happen to a few people, may just mean that it is those few who seek help, while the rest keep quiet.

FINDING THE FACTS

"Again, we used to believe firmly that some people were born to have accidents—that there were Accident Prone Percies and Calamity Joes. We are not so sure now. We realise that more accident recurrence is not necessarily indicative of some oddness in our native endowment. It may have developed by force of habit, or force of expectation. And like many habits and expectations, it may be capable of being changed.

"There are, of course, some things that we can still believe in—for example, that defects of physique and defects of health (especially perhaps in blood pressure) are connected with accidents; that age, too, is connected with them; and that the same is true of drunkenness and fatigue. But these don't take us very far."

Mr. Rodger suggested that, if we were going to find out more about accident causation and accident prevention, we should begin to tackle more thoroughly the task of extracting relevant facts and opinions from people, such as safety officers.

In supporting what Professor Mace had said about the importance of inculcating good habits of thought and action, Mr. Rodger said that it was his own personal view that we were more likely to make progress in accident prevention by sound, positive training programmes, than by elaborate attempts to detect and reject workers to whom we airily applied labels like "accident prone."

ACCIDENT PRONENESS

The last speaker, MR. WALTER CHARLES KING, MA, commented on what Dr. May Smith had said about the attitude that "It can't happen to me," and spoke of people who lived on the slopes of Mount Vesuvius, always with this attitude that it would not happen to them.

In connection with accident proneness, he spoke of statistics issued by the Industrial Health Research Board which showed that 25 per cent. of the people suffer 75 per cent. of the accidents.

He continued: Accident-proneness must not be confused with accident liability which is related to the nature of the job. Obviously, a coal miner has much more chance of having an accident than an office worker. The idea that some people are Calamity Joes, etc., would appear to go back to Jonah and the Whale.

Accidents are a matter of very great interest to the psychologists, said Mr. King, and spoke of the tendency to confine interest in an accident rather to the way in which it happened, what part of the body was injured, etc., instead of why it should have happened.

Investigations carried out just before the last war tended to show that accident prone persons were industrially less efficient than other persons. There also appeared

to be a tendency for them to suffer more from nervous complaints.

In connection with propaganda, he said it had been suggested that it be reserved for persons who were accident prone. Mr. King thought propaganda might well have the effect of upsetting a person who was not likely to have an accident.

With further reference to accident prone persons, Mr. King said that research indicated that the degree of proneness increased with increased risk, and exposure to accidents. It did, therefore, appear to be important to take accident prone persons out of risky situations, so that the degree of proneness did not have a likelihood of increasing.

Mr. King spoke of the importance of being able to carry out such research work, but said that it could not be attempted without the assistance of industry. In general, management was inclined to take a poor view of a man being taken off a productive job to satisfy some crazy psychologist, but the wholehearted co-operation from management was essential.

COST OF HOUSING IN BIRMINGHAM

Full Investigation Sought

COUNCILLOR D. H. HOWELL told the Birmingham City Council on January 4 of a "serious and shocking state of affairs" arising from, he said, the increased cost of Corporation houses over and above the amount accepted in the tender prices.

Calling for a full investigation, he instanced seven contractors whose prices per house had gone up by between £200 and £383. In his reply, ALDERMAN A. F. BRADBEER, chairman of the house building committee, said he would seek more information on the matter.

COUNCILLOR HOWELL said he was not convinced that the increases had gone in wages or in other ways put forward as excuses. "I do not think there is any other industry in Birmingham which could tender for a contract and then get away with increases of this proportion and magnitude."

FEWER HOUSES COMPLETED

It was reported at the same meeting that the number of dwellings completed in Birmingham in 1954 was only 3,005—1,001 fewer than in 1953 and the lowest number since 1950.

The heavy drop in the number of new homes so desperately needed in the city was expected to produce a strong attack on the Socialist group controlling the council by the Conservative members. Conservatives accuse the Socialists of lack of drive and of preoccupation with setting up the Corporation's own direct labour-building department.

In 1954 the average number of dwellings completed per week was 57.8, compared with 75.6 in 1953; with 91.2 in 1952 and 66.6 in 1951. The Socialists pledged at the last municipal election to maintain house building at the rate of 4,000 dwellings a year.

Conservatives regard as ironic the fact that while national housing under a Conservative Government has reached an all-time record, Birmingham's figures, under a Socialist City Council, are now declining.

Previously, when the Socialist Government pegged housing figures nationally, a Conservative-controlled Birmingham City Council was setting the pace for the rest of the country, it is stated.

HOUSING IN BRITISH GUIANA

Great Scope for Development with Assistance of Britain

IN a talk which he gave to the Housing Centre recently, MR. A. E. HICKINBOTHAM, an assistant secretary at the Ministry of Housing and Local Government, who recently studied housing problems in British Guiana and made recommendations on them to the authorities in that Colony, indicated that there was great scope for development there and that the help of the United Kingdom would, in more ways than one, be necessary if progress was to be made and a sufficient number of dwellings erected to cope with the recent increase in the survival rate of the population.

After briefly describing the chief geographical features of British Guiana and stating that the population was about 450,000 (100,000 of whom were living in the capital, Georgetown), Mr. Hickinbotham said the coastal stretch facing the Atlantic, in which the greater part of the population lived and worked, was below high-tide level. A sea wall ran all the way along the coast, and at the back a dam kept out the swamp water. Water from inland was used for irrigation.

Mr. Hickinbotham went out to British Guiana, at the invitation of the Colonial Secretary, about the middle of March last year, taking with him as technical adviser an architect from the Building Research Station. Before he went out a grant of 10,000,000 dollars to the Colony was announced in Parliament by the Colonial Secretary.

Describing the type of house most suitable for the country, Mr. Hickinbotham said the climate was a comparatively easy one, with the temperature fairly uniform throughout the year and throughout the day, seldom rising above 85 degrees or falling below 75 degrees (shade temperatures). There were no periods of incessant rain, but the atmosphere was almost continuously damp. These conditions made the problem of providing houses a simple one compared with that presented by a temperate climate. There was, for instance, no need to have cavity walling.

SHORT LIFE OF HOUSES

The traditional house in British Guiana was of timber, because this was the chief local building material. The houses were built on stilts because of the low-lying country and because there was a north-east breeze continually blowing from the sea. Mostly the roof was of aluminium sheeting or wooden shingles. Even if the houses were well painted they did not last long, only about 10 to 12 years.

Referring to the now increasing population (due to the fact that malaria, which had killed off so many people in the past, had been conquered), Mr. Hickinbotham said that, while in a few years the population would have grown very substantially, there was in the interim a period during which the existing housing deficiencies could be made up.

One of the first things his technical colleague did when they arrived in British Guiana was to design a house which suited the local conditions and could be built as cheaply as possible. It had two storeys and two bedrooms, with concrete walling downstairs and timber boarding upstairs and a plain aluminium roof. Some ideas were imported from the United Kingdom, such as the possibility of living with lower ceilings. A lot of money had been wasted in the traditional house in building high ceilings and he had seen houses with ceilings 10 to 11 feet from the floor to the top of the pitch, when obviously the money could have been better spent on providing greater floor area.

He and his technical adviser managed to get some of the new-design houses under contract. The price was around 1,700 West Indian dollars, which in our currency was about £350. He discovered that the rent which the average man in British Guiana could afford to pay corresponded to a house costing about 1,500 dollars, so that when he left the country there was still a shortage of houses which could be built at a price to suit the normal pay packet over there.

They had found that there was a Housing Act in force there which was based on our 1930 Act and was the result of Professor Gardner-Medwin's advice on the West Indies generally. There were plenty of housing powers available to the authorities, but they had never been used. There was a Central Housing Board on which sat officials who were normally concerned with other aspects of government—a common arrangement in British Guiana administration. The other members were appointed by the Governor from the Legislative Council, and that body was doing all the house building by contract. Up to the time he arrived there they had built something like 200 flats and were just finishing off 100 houses. The flats were intended for people who had been displaced from two slum areas.

The houses that were being finished were turning out at about 3,000 dollars each, and the great question was how were they going to be let? (All the prices he quoted included the cost of all fittings but not of services.)

There had also been a small rural scheme started by the Local Government Department and taken over by the Housing Department, under which people were given a grant for building houses themselves.

LOCAL AUTHORITIES' ROLE

The local authorities were not much use for house building, but he had suggested that they could advise on site selection and on the sort of houses wanted and assist with the selection of tenants.

There were three other main builders of houses in the Colony. One was the Sugar Welfare Committee, composed of sugar producers and workers. Just before he went to British Guiana another 2,500,000 dollars had been put into that organisation's housing fund, which had been lending up to 1,000 dollars to people for them to build houses themselves. The other comprised the remaining big employers, the largest being the bauxite producers, and the Public Works Department, which was building public offices.

Mr. Hickinbotham and his colleague found, both on the Government side and among the people who might want

houses, a very strong feeling that houses should be built to purchase, rather than to be rented.

OBSTACLES TO PROGRESS

The obvious gaps in the arrangements for providing housing in the Colony were these: (1) Staffing. One of the stiffest obstacles he found was a prejudice against appointing any housing staff. (2) Slowness in administration. (3) Failure to purchase sites. He had told them that the Government must always find the land and must be ready to use compulsory purchase powers. (4) Lack of design. (5) Lack of purchase facilities. (6) Lack of housing standards. (7) Bad use of timber, which was often not properly seasoned and there were no standard sizes. (8) Lack of standards for components such as doors and windows. (9) No points system for allocating houses. (10) The use of the grant from the United Kingdom. He had suggested that the grant should be used as a subsidy to the Colony and not simply handed on to the individual.

There were no statistics of the building and contracting firms in the Colony, said Mr. Hickinbotham, but in Georgetown there were four or five quite good firms. The labour available comprised about 3,000 to 4,000 operatives in the whole Colony. He had recommended that tenders should be invited from four or five big United Kingdom contractors for clearing and preparing sites, and the actual development of them could be done by the local building firms. He explained that transport difficulties precluded the use of much prefabrication if imported, but that some local prefabrication of components such as joists and rafters could be done and perhaps some prefabrication of units, such as walls, on the sites.

OPERATIVES' WAGES

Costs Need Not Rise

"JUST as railwaymen say the nation cannot have cheap transport at the expense of railwaymen, and mineworkers say people cannot have cheap coal at the expense of the miners, so we say there cannot be cheap houses at the expense of the building trades operatives," declared MR. GEORGE LOWTHIAN, general secretary of the Amalgamated Union of Building Trades Workers, at Beverley (Yorks) on January 5. He was speaking at a Beverley branch social meeting.

There had been criticism of union negotiators who last year pressed employers for a 9d. per hour increase for building trades operatives and eventually settled for 1½d. an hour, he said. This time they were seeking an increase of 4d. per hour and they were not going to run away from that claim.

"If this increase is granted, we say there need not be another penny on the cost of houses. We are satisfied that the game the employers are playing up and down the country—the margins of profit they must have by the wages they are offering to-day—leaves plenty of room for our claim without affecting the public at all." That was a point the union negotiators would stress when they met the employers on January 13, he said.

One of the objectives they had in mind was that of establishing the principle of men taking their second week's holiday in conjunction with the first, and not, as some employers wished, during the winter. "We will not rest content until we are like the rest of the industry, and can take our holidays in the summertime when it is most beneficial to us." He described the system of "labour-only sub-contracting" as the most pernicious evil which they had had to combat since the war. The union would continue to fight it with all their power. But labour-only sub-contracting could not exist if bricklayers refused to work for employers who practised it, he said.

NEW COMPANIES

THE FOLLOWING NEW COMPANIES, registered in England, have been announced by Jordan and Sons, Ltd., company registration agents.

S. C. Farthing & Son, Ltd. (540795.) Regd. November 19, 1954, Tomline-rd., Felixstowe, Suffolk. Bldr. Nom. cap.: £6,000. Dir.: S. C. Farthing.

V.G. Estates, Ltd. (540856.) Regd. November 20, 1954, 65, Moorgate, EC. Bldrs. Nom. cap. £2,000: Dirs. to be appointed by sub. Sub.: J. Pizzey.

John Maunders, Ltd. (540884.) Regd. November 22, 1954, 44, Brazennose-st., Manchester. Bldrs. and genl. contractors. Nom. cap.: £4,000. Dir.: J. Maunders.

Sure Seal Roofing, Ltd. (540952.) Regd. November 23, 1954, 105, Upminster-rd., Hornchurch, Essex. Sealers by a special process of roofs, glazed areas and other parts of industrial and other bldgs., etc. Nom. cap.: £100. Dir.: W. A. Reddington.

Abrahams and Bercovitch, Ltd. (540961.) November 23, 1954, 17-19, Downing-st., Manchester. Public works contractors. Nom. cap.: £500. Dir.: L. W. Bercovitch.

A. & J. Rigg (Accrington), Ltd. (540964.) Regd. November 24, 1954, 366, Blackburn-rd., Accrington. Bldrs. and contractors. Nom. cap.: £1,000. Dir.: A. Rigg.

Abbott and Burgess, Ltd. (540965.) Regd. November 24, 1954. Plymouth-chbrs., Caerphilly, Glam. Bldrs. and contractors. Nom. cap.: £5,000. Dir.: D. Abbott.

A. J. Canter & Sons, Ltd. (540967.) Regd. November 24, 1954, Main-rd., Westcott, Surrey. Bldrs. and contractors. Nom. cap.: £5,000. Dir.: Nora M. Canter.

Barwood, Hodge & Co., Ltd. (540974.) Regd. November 24, 1954, 128, High-st., Abersychan, Mon. Sanitary, heating and hot water engr. Nom. cap.: £1,100. Dir.: D. G. Barwood.

E.M. & M. (Building and Construction) Co., Ltd. (540979.) Regd. November 24, 1954, 9, Westlanddrive, Brookmans Park, Herts. Nom. cap.: £500. Dir.: J. Madden.

J. Probert & Co. (Aimsbury), Ltd. (540993.) Regd. November 24, 1954, 1-2, Waterloo-st., Birmingham, 2. Bldrs. and bldg. contractors. Nom. cap.: £3,500. Dir.: R. A. Probert.

Nortons Plant Hire, Ltd. (540999.) Regd. November 24, 1954, Dowsetts-lane, Ramsden Heath, Essex. Plant hire contractors, etc. Nom. cap.: £3,000. Dir.: F. A. Norton.

Crawford and Huddart, Ltd. (541018.) Regd. November 24, 1954, Nixon's-yard, Gt. North-rd., Wideopen, Newcastle-on-Tyne. Bldrs. and contractors. Nom. cap.: £2,000. Dir.: E. Crawford.

Geo. Streamer, Ltd. (541052.) Regd. November 25, 1954, 39, Ledgers-rd., Slough. Fencing contractors, bldrs., etc. Nom. cap.: £3,000. Permt. dir.: G. Streamer.

L. E. Chenery, Ltd. (541058.) Regd. November 25, 1954, 225, High-rd., Ilford. Bldrs. and contractors. Nom. cap.: £100. Dir.: L. E. Chenery.

Room-Unit Production, Ltd. (541068.) Regd. November 25, 1954, 36, Gloucester-place, Portman-sq., W1. Civil engineering and bldg. contractors. Nom. cap.: £100. Dir.: M. G. R. Lyell.

Carter and Ward of Wickford, Ltd. (541096.) Regd. November 26, 1954, Redlands, Harold-gdns., Wickford, Essex. Bldrs. and contractors. Nom. cap.: £10,000. Dir.: Silva L. B. Carter.

Frognal Development Co., Ltd. (541110.) Regd. November 26, 1954, 6, Little Russell-st., EC1. Bldrs., etc. Nom. cap.: £500. Dir.: H. Lubbock.

Ronald Clarke (Products), Ltd. (541128.) Regd. November 26, 1954, Victoria-chbrs., 17, Victoria-st., SW1. Civil engng., etc. Nom. cap.: £100. Dir.: R. A. W. Clarke.

Stonlan, Ltd. (541134.) Regd. November 26, 1954, Imperial-bldgs., Bridge-st., Walsall. Bldrs. and contractors, etc. Nom. cap.: £100. Permt. dir.: Mrs. D. M. Bence.

A. C. V. Telling (Bath), Ltd. (541169.) Regd. November 27, 1954, 3, St. Pauls-rd., Bristol, 8. Plastering contractors, bldrs., etc. Nom. cap.: £100. Dir.: A. C. V. Telling.

C.A.C.A. Ltd. (541174.) Regd. November 27, 1954. Swinley-bldgs., Bath-rd., Slough. Treating, colouring, hardening, waterproofing and improving cement and concrete, etc. Nom. cap.: £100. Dir.: C. A. Fincham.

Cox and Elliott, Ltd. (541182.) Regd. November 27, 1954, 24, Maypole-cres., Barkingside, Ilford, Essex. Bldrs Nom. cap.: £1,000. Dir.: E. T. Cox.

C. W. Blanchard (Appleby), Ltd. (541184.) Regd. November 27, 1954, School-lane, Appleby, nr. Scunthorpe, Lincs. Bldrs. and contractors, timber mchts., saw mill proprs., etc. Nom. cap.: £1,000. Dir.: C. W. Blanchard.

E. Orpin & Son, Ltd. (541187.) Regd. November 27, 1954, 92, Anerley-rd., SE19. Bldrs. Nom. cap.: £3,000. Dir.: C. E. Orpin.

Hawkins (Harrow), Ltd. (541193.) Regd. November 27, 1954, 262, Northolt-rd., Harrow. Bldrs., public works contractors and civil engrs., etc. Nom. cap.: £2,000. Dir.: F. G. Hawkins.

H. E. Bardwell, Ltd. (541194.) Regd. November 27, 1954, Berkeley Works, Hewlett-rd., Cheltenham. Bldrs. Nom. cap.: £7,500. Dir.: H. E. Bardwell.

F. W. Bevan & Sons, Ltd. (541283.) Regd. November 30, 1954, The Berrie, Ellesmere-rd., Ashington, Rochford, Essex. Bldrs., contractors and decorators. Nom. cap.: £100. Dir.: F. W. Bevan.

R. Saxby, Ltd. (541384.) Regd. December 1, 1954, 111, Ringwood-rd., Totton, Southampton. Bldrs. Nom. cap.: £2,000. Dir.: R. Saxby.

Fowler Elliott, Ltd. (541300.) Regd. November 30, 1954, 39, High-st., Crawley. Bldrs. and contractors, etc. Nom. cap.: £250. Dir.: L. C. J. Fowler.

Crook Bros., Ltd. (541324.) Regd. December 1, 1954, 371, Millbrook-rd., Southampton. Bldrs. and contractors. Nom. cap.: £5,000. Dir.: D. H. Crook.

R. A. Rehling & Co., Ltd. (541370.) Regd. December 1, 1954, 26, Willow-rd., Slade Green, Kent. Bldrs., contractors, etc. Nom. cap.: £600. Dir.: F. W. Carter.

Alan Chapman, Ltd. (541385.) Regd. December 2, 1954, 36, Cottingham-rd., Hull. Painters and decorators, etc. Nom. cap.: £2,500. Dir.: W. A. Chapman.

Cochrane Bros., Ltd. (541393.) Regd. December 2, 1954, 23, Pickford-lane, Bexleyheath. Plumbers, bldrs.' mchts., ironmongers, etc. Nom. cap.: £2,000. Dir.: D. P. Cooper.

Wm. A. Hunt & Son, Ltd. (541424.) Regd. December 2, 1954, Summerville, Kidderminster-rd., Bewdley, Worcs. Public works contractors, etc. Nom. cap.: £500. Dir.: W. A. Hunt.

L. A. Redington, Ltd. (541406.) Regd. December 2, 1954, 29, Fairfield-av., Grays, Essex. Bldrs. and contractors, etc. Nom. cap.: £6,000. Dir.: L. A. Redington.

Norman & Son (Builders), Ltd. (541412.) Regd. December 2, 1954, 34, Mill-rd., Burgess Hill, Sussex. Bldrs., decorators, contractors and sanitary engineers. Nom. cap.: £100. Dir.: C. R. Norman.

Richards & Wykes, Ltd. (541417.) Regd. December 2, 1954, 21, Warwick-row, Coventry. Bldrs., contractors and decorators, etc. Nom. cap.: £100. Dir.: D. B. Wykes.

Bradley's (Blyth), Ltd. (541440.) Regd. December 3, 1954, 19, Bowes-st., Blyth, Northumberland. Bldrs.' mcht. Nom. cap.: £2,000. Dir.: R. Bradley.

Cross & Preston, Ltd. (541444.) Regd. December 3, 1954, 53, Swithenbank-av., Ossett, Yorks. Bldrs. Nom. cap.: £1,000. Dir.: J. Cross.

J. T. Yearsley & Co., Ltd. (541456.) Regd. December 3, 1954, Parnelscroft, Park-lane, Congleton, Ches. Bldrs. and contractors, etc. Nom. cap.: £1,000. Permt. mang. dir.: J. T. Yearsley.

M. Sanders, Ltd. (541465.) Regd. December 3, 1954, 18/20, Medlar-st., SE5. Bldrs. and letters on hire of bldrs.' plant, machinery, etc. Nom. cap.: £200. Dir.: to be apptd. by subs. Sub.: R. S. Harris.

Chicago Bridge, Ltd. (541526.) Regd. December 4, 1954, 117, Old Broad-st., EC2. Constructional, mech. and civil engrs. and engineering consultants, etc. Nom. cap.: £150,000. Dir.: to be apptd. by subs. Sub.: J. Emmitt.

J. P. B. Precision Woodwork, Ltd. (541836.) Regd. December 11, 11, Whitby-st., E1. Nom. cap.: £1,000. Dir.: C. N. James.

L. A. G. Hawkes, Ltd. (541837.) Regd. December 11, 5, Victoria-rd., Sevenoaks, Kent. Nom. cap.: £10,000. Dir.: L. A. G. Hawkes.

OFFICIAL NOTIFICATION

Larger Imports of Dollar Hardwood in 1955

THE Board of Trade announces that, as soon as the necessary administrative arrangements can be made, a quota at the annual rate of £3,000,000 fob will be established for the import, for general purposes, of hardwood from the Dollar Area. This will be in addition to expenditure on dollar hardwood imports for special purposes under existing arrangements.

A quota will be allocated in two half-yearly instalments to hardwood-using firms and hardwood importers. The individual allocation to hardwood-using firms and hardwood importers will be based respectively on usage and imports in a specific period. Full details of the scheme will be announced in due course by the Imports Licensing Branch of the Board of Trade.

REGISTERED HOUSE-BUILDERS

Increasing Scope of Work in 1955

SPEAKING at the annual general meeting of the Federation of Registered House-Builders, held in London, on January 11, MR. R. W. WHITTINGTON, the retiring president, said that now that private builders were free from controls all the signs were that during 1955 they would complete well over 100,000 houses for sale and it was thus more than ever essential that increasing attention was given to quality in design and craftsmanship. At the same time costs must be kept to a minimum so that the needs of all those wishing to own their own homes could be met.

"The wide application of the system of inspection, certification and guarantee operated by the National House-Builders' Registration Council is the best means of achieving these objects," Mr. Whittington declared, "for it is the industry's own voluntarily imposed scheme of self-discipline, to ensure the highest standards of service to the public.

"Already the steady expansion in the work of the Registration Council is proving that the scheme gives protection to house purchasers, the Government, local authorities and building societies alike."

Election of Officers

AT their annual meeting at the Dorchester Hotel on Tuesday, the Federation elected the following officers for 1955: President, George W. Reed (Southgate, London, N14); senior vice-president, Frank Russon (Birmingham); junior vice-president, C. R. Setter, JP (Bristol); immediate past-president, R. W. Whittington (Southampton).

NEWS IN BRIEF

SURVEYORS' CANDIDATES

The Institute of Quantity Surveyors, 98, Gloucester-place, W1, have announced that over 600 candidates will be sitting their examinations during February 28 to March 4, 1955, inclusive, at centres established in the United Kingdom and abroad.

THE LATE MR. R. O. HERFORD, OBE

The death of Mr. Robert Osler Herford, OBE, occurred at Buenos Aires on January 2, during a visit to the oversea agents of the Renold and Coventry Chain Co., Ltd., Manchester. Mr. Herford was for many years managing director of the company, retiring from that office in 1953. During the last war his services were given to the Ministry of Supply as Controller of Inspection (Administration).

POLICE STATIONS

A memorandum on the design and construction of police stations has been published by the Stationery Office, price 1s. 6d. It makes available in convenient form the accumulated experience of those concerned with the building of post-war police stations.

CEMENT PRODUCTION IN 1954

Cement production in 1954 averaged a rate of a million tons a month for the first time, according to figures issued by the Cement Makers' Federation. The total production exceeded that for 1953 by some 750,000 tons, an increase of rather more than 6½ per cent.

HUMBER BRIDGE SCHEME

Hull City Council are to call for preliminary reports, estimates and plans for the proposed Humber Bridge, to be prepared immediately at a cost of £5,250. This will enable the Corporation to press for the earliest possible authorisation of the scheme.

EMPLOYMENT FIGURES

There was a decline during November in the numbers employed in the building and contracting industries of 3,000, bringing the total at the end of the month to 1,422,000, according to figures issued by the Ministry of Labour and National Service. The total working population was estimated to have increased by 50,000 (mainly women) during the month.

THEATRE CONVERSIONS

Discussions have taken place on proposals for converting two London theatres into offices and showrooms. The properties concerned are the St. James's Theatre and the Stoll in Kingsway. Neither deal has been settled, although negotiations for the sale of the leaseholds have been proceeding. A scheme for the St. James's Theatre, prepared by the firm of Leo O. L. Hannen and John H. Markham, has already been approved in principle by LCC. Plans for the Stoll have been submitted by Lewis Solomon, Son and Joseph, and are still awaiting consideration.

BUILDING AS A CAREER

Need for Good Craftsmen

OPENING the Cumberland Building Exhibition at the College of Further Education, Workington, Cumberland, on January 3, MR. J. R. BEVINS, MP, Parliamentary Secretary, Ministry of Works, said:—

Here to-day young men who are getting near to leaving school can see what the building industry has to offer. This industry needs craftsmen—good craftsmen—and if it is to have them it must support a sensible system of training and apprenticeship. In this the building departments of our technical colleges are doing very valuable work. How valuable is evidenced by the number of building apprentices who are making their way through the colleges and sometimes go on to secure university degrees in building.

What the industry can promise young men is well displayed in the exhibit "Careers in Building." It is good to know that the officers of the Ministry of Labour are here to advise the parties of school boys who will be attending the exhibition with their parents. That is one object, perhaps the most important of this exhibition. Another is to give all those employed in the industry in Cumberland the chance to see a wide range of building materials, building methods and techniques.

COMPARATIVE PRICES OF MATERIALS

Description as Shown in Current Prices of Materials Pages

(Copyright *The Builder*)

	January, 1939	*January*, 1954	*January*, 1955
BRICKS—	£ s. d.	£ s. d.	£ s. d.
FLETTONS ... ... per 1,000	2 6 3	5 10 0	5 13 0
BLUE WIRECUTS ... per 1,000	7 4 0	21 10 6	22 11 0
GLAZED ... ... per 1,000	24 0 0	64 0 0	64 0 0
PIT SAND ... ... per yd. cu.	7 9	1 0 5	1 1 8
¾ in. SHINGLE ... ... per yd. cu.	7 3	18 11	1 0 0
¾ in. BROKEN BRICK ... per yd. cu.	11 3	19 3	19 3
PORTLAND CEMENT ... per ton	2 2 0	4 15 0	4 16 6
PORTLAND STONE ... ... per ft. cube	4 5	7 5	8 1½
SLATES—			
24 in. by 12 in. ... ... per 1,000	31 5 0	100 16 9	113 0 4
20 in. by 10 in. ... ... per 1,000	20 15 0	68 10 9	74 12 0
16 in. by 10 in. ... ... per 1,000	14 7 6	42 18 3	44 7 0
TILES—			
MACHINE-MADE (STAFFS) per 1,000	4 2 6	13 5 0	13 8 9
HAND-MADE (BERKS) ... per 1,000	4 17 6	12 15 6	13 1 9
SOFTWOOD—			
CARCASSING QUALITY ... per std.	£18—£22	£90—£100	£95—£100
JOINERY QUALITY ... per std.	£28—£35	£105—£125	£110—£130
HARDWOOD—			
EUROPEAN OAK ... ... per ft. cu.	14 0	1 17 6	2 2 6
ENGLISH OAK ... ... per ft. cu.	10 0	1 5 0	1 10 0
HONDURAS MAHOGANY ... per ft. cu.	15 0	2 15 0	3 5 0
MOULMEIN TEAK ... per ft. cu.	15 0	3 0 0	3 5 0
R.S. JOISTS FABRICATED ... per ton	16 10 0	51 15 0	54 0 0
⅝in. MILD STEEL RODS ... per ton	15 0 0	37 1 6	40 6 0
1 in. GALVANISED BARREL "C" per ft. run	5¾	11¼	11½
SHEET LEAD ... ... per ton	23 0 0	128 10 0	142 5 0
LINSEED OIL... ... ... per gal.	2 11	13 3	12 0
GROUND ENGLISH WHITE LEAD ... ... per cwt.	2 10 0	8 2 0	8 18 0
WHITE LEAD PAINT... ... per gal.	16 8	2 18 0	3 2 0
RED LEAD ... ... per cwt.	1 18 0	6 12 0	7 4 3
SHEET GLASS (24 oz.) ... per ft. sq.	3⅜	7¼	7⅞

The Builder

CURRENT PRICES OF MATERIALS

THE information given on these pages has been specially compiled for *The Builder* and is copyright. It is the intention that the details given should indicate fair average prices of materials not necessarily the highest or the lowest. The prices apply to large quantities of materials loaded at works, delivered at London Stations or at site in London Area as stated. Prices for smaller quantities ex merchants warehouse will necessarily be higher so as to include the stocking and handling costs involved. Due to the exceptional circumstances now prevailing it is recommended that the prices of materials should be confirmed by inquiry from suppliers and merchants.

AGGREGATES AND SAND

Delivered site in full lorry loads. Average of prices for Boroughs of Westminster, Paddington, Holborn and St. Pancras.

		£	s.	d.
Pit Ballast	per yd.	1	3	1
Pit Sand	,,	1	1	8
Washed Sand	,,	1	3	8
¾ in. Shingle	,,	1	0	0
¾ in. Broken Brick	,,		19	3
Pan Breeze	,,		9	6
Fine or Coarse Foamed Slag Aggregate ... ... 2 yds. of fine and 2.6 yds. of coarse per ton	per ton	3	0	9

CEMENT, etc.

Including non-returnable jute sacks or paper bags.

Best British Portland Cement. Standard Specification delivered Charing Cross area.				
6-ton loads and upwards, site	per ton	4	16	6
1 to 6 tons, site	,,	5	5	6
Rapid Hardening Cement in 6-ton loads and upwards to site	,,	5	4	6
1 to 6 ton do. site	,,	5	13	6
Aquacrete Water Repellent Cement. 32s. 6d. per ton on ordinary cement prices.				
Red, Buff or Khaki Colorcrete in 6-ton lots	,,	6	18	0
Other colours according to colour.				
In 4-ton lots from 21s. 9d. to 435s. 9d. per ton.				
White Portland Cement	,,	12	17	0
Under 1 ton	per cwt.		15	4
417 Cement (Ultra Rapid Hardening) in 6-ton lots and upwards	per ton	6	9	0
Super Cement (Waterproof), 32s. 6d. per ton above Portland Cement.				
Cullamix Tyrolean Finish, £9 4s. 3d. to £10 17s. 9d. (1-ton loads and upwards).				
Lightning and Ciment Fondu Brands High Aluminous cement, 6-ton lots and up	,,	14	0	9
Stourbridge Fireclay, 6-ton loads at Railway Depot, London	,,	6	2	3

BRICKS

Full Loads.				
First Hard Stocks	per 1,000	11	7	0
Second Hard Stocks	,,	10	11	0
Mild Stocks	,,	8	16	6
All loaded free into lorry at the works. The question of haulage is still very difficult and prices must be obtained from job to job.				
2½ in. Nominal Fletton Bricks to sites in W.C.				
District Commons	,,	5	13	0
Cellular do.	,,	5	13	0
Keyed do.	,,	5	15	0
Rustics	,,	6	18	0
Cellular Rustics	,,	6	18	0
Single Bullnose do.	,,	6	13	0
Sandfaced	,,	7	13	0
Best Blue Pressed Staffs (London Stations)	,,	24	19	6
Do. Bullnose (London Stations)	,,	25	13	6
Blue Wire Cuts (London Stations)	,,	22	11	0
Midhurst Lime Bricks (London Sites)	,,	10	3	0
Uxbridge Whites (London Sites)	,,	9	1	6
2½ in. Best Stourbridge Fire Bricks (London Stations)	,,	24	6	0
3 in. do. (London Stations)	,,	29	3	3
2½ in. Machine-made Sandfaced Red Facings (London Sites)	,,	13	19	6
2½ in. Machine-made Multi Red Facings (London Sites)	,,	14	4	6
2½ in. Hand-made Sandfaced Red Facings (London Sites)	,,	14	11	0
2½ in. Hand-made Sandfaced Multi-Colour Facings (London Sites)	,,	14	11	0
Hand-made Sandfaced Cherry Red Facings. Berkshire district (London Sites)	,,	17	5	6
Hand-made Sandfaced Multi Colour Facings. Berkshire district (London Sites)	,,	17	5	6
Rubber Bricks for gauged arches (London Sites)	per 1,000	41	10	0
2½ in. Surrey Clamp Burnt Multi Stock Facings (London Sites)	,,	13	6	0
2½ in. Surrey Kiln Burnt Multi Stock Facings (London Sites)	,,	14	4	6
Glazed Bricks (London sites), White, Ivory, Brown—				
Stretchers	,,	64	0	0
Headers	,,	63	0	0
Quoins, Bullnose and 4½ in. Flats	,,	80	0	0
Double Stretchers	,,	85	0	0
Double Headers	,,	77	10	0
One side and two ends	,,	87	0	0
Two sides and one end	,,	89	10	0
Splays and Squints	,,	83	0	0
Cream and Buff £3 extra over White. Other colours, hard glaze, £8 10s. 0d. extra over White. All above prices plus 7½% for Best quality and plus 7½% less 10% for Second quality.				

PARTITION SLABS, etc.

Delivered Central London Area.

HOLLOW CLAY PARTITION BLOCKS (Keyed)

	Minimum lorry loads.			
2 in.	140 yds.	per yd. sup.	4	3
2½ in.	140 yds.	,,	4	6
3 in.	120 yds.	,,	5	2
4 in. (6 cavity)	95 yds.	,,	6	7
Half blocks at no extra charge.				

CLINKER CONCRETE.

2 in.	100 yds.	,,	3	7
2½ in.	85 yds.	,,	4	2
3 in.	75 yds.	,,	5	0
4 in.	55 yds.	,,	6	2

CRANHAM

2 in.	,,	6	8	
2½ in.	,,	7	4	
3 in.	,,	8	7	
4 in.	,,	10	7	
4½ in. Load bearing quality	,,	11	8	

FLOOR BLOCKS

3 in. Floor Blocks 12 in. by 12 in. delivered in full lorry-loads	per 1,000	32	11	0
4 in. do.	,,	34	18	0
5 in. do.	,,	41	11	0
6 in. do.	,,	46	16	0
7 in. do.	,,	56	18	0
8 in. do.	,,	66	14	0

STONEWARE DRAIN PIPES, etc.

The following are the percentages to be added to the Standard List prices delivered London Area.

	Over 2 tons	Over 100 Pieces under 2 tons	Under 100 Pieces under 2 tons
Best Quality	+67½%	+97½%	+107½%
B.S.S. Best do.	+10% +67½%	+10% +97½%	+10% +107½%
Tested Quality	+37½% +67½%	+37½% +97½%	+37½% +107½%
B.S.S. Tested do.	+47½% +67½%	+47½% +97½%	+47½% +107½%

		£	s.	d.
3 in. Land Drain Pipes (in 12 in. lengths)	per 1,000	10	13	6
4 in. do.	,,	14	2	0

STONE

Bath Stone—				
Monks Park	per ft. cube		7	10
St. Aldhelm Box Ground	,,		8	10
Delivered in railway trucks at South Lambeth B.R. Western Region				
Doulting Stone Random Blocks. Delivered London area	,,		8	4
Beer Stone. Delivered London area	,,		8	0
Portland Stone—				
Brown Whitbed in random blocks, 20 ft. average delivered in railway trucks at Nine Elms, B.R. Southern Region	,,		8	1½
Yorkshire Stone—Blue Robin Hood Quality.				
Delivered to site London in 6-ton lots.				
9 in. × 3 in. Rubbed, weathered, throated and stooled cills	per ft. cube	3	4	3
12 in. × 6 in. do. do.	,,	2	6	0
12 in. × 3 in. Plain coping, twice throated	,,	1	15	4
12 in. × 3 in. Weathered and twice throated coping	,,	2	7	4
14 in. × 6 in. do. do.	,,	2	2	8
4½ in. × 9 in. Plinth, rubbed on top and face	,,	1	18	1
3 in. sawn two sides Slabs, random sizes	per ft. sup.		6	9

R

STONE—*continued*

		£	s.	d.
Templates and Cover Stones, 3 in., 4 in. and 6 in. thick, edges coped for rendered brickwork ...	per ft. cube	1	3	5
Do. do. fair one edge for fair faced brickwork		1	7	10
Hard York—				
12in. × 2in. Square Steps, rubbed on top and edge	per ft. run		8	2
14 in. × 3 in. Round-nosed Steps, rubbed on top and front	per ft. cube	2	3	8
12 in. × 6 in. Plain Steps, rubbed top and front ...	,,	1	18	3
2 in. Rubbed and Jointed Paving, given sizes ...	per ft. sup.		7	10
2 in. Sawn Paving, edges squared, in random sizes	per yd. sup	2	13	10

TILES and PANTILES

Delivered London area by road in 6 tons or over per 1,000

	£	s.	d.
Machine-made Pantiles and French pattern Tiles from Lincolnshire district	29	8	0
Hand-made Pantiles Berkshire district	47	10	0
Hand-made Double Roman Bridgwater district	58	13	6
Hand-made 10½ × 6½ tiles Berkshire district	13	1	9
Machine-made 10½ × 6½ Staffordshire district	13	8	9
Hand-made Hip and Valley tiles per doz.	1	8	9
Machine-made Hip and Valley tiles do.	1	6	6
Concrete tiles 10½ × 6½	7	14	6
do. Interlocking (49S)	18	9	6

NOTE.—Breakage in transit, purchasers' responsibility.

SLATES

First-quality Slates from Penrhyn or Portmadoc, carriage paid in full truck loads to London Rate Station. Per 1,000 actual

24 × 12	113	0	4
22 × 12	93	16	0
22 × 11	84	15	0
20 × 12	79	19	6
20 × 10	74	12	0
18 × 10	53	18	9
18 × 9	47	5	6
16 × 10	44	7	0
16 × 8	34	10	6

NOTE.—Breakage in transit, purchasers' responsibility.

TIMBER

Softwood—					
Joinery quality	Ex. Wharf per standard			£110 to	£130
Carcassing quality	do.	,,		£95 to	£100
1 in. Tongued and Grooved Flooring	do.	,,		£106 0	0
Hardwood—					
Mahogany—African S.E. ...	do.	per ft. cube	1	5	0
do. Honduras do. ...	do.	,,	3	5	0
Oak European do. ...	do.	,,	2	2	6
do. Japanese do. ...	do.	,,	2	10	0
do. English Logs sawn	do.	,,	1	10	0
Teak 8 in. average S.E.	do.	,,	3	5	0
Walnut African Logs sawn	do.	,,	1	1	6

DOORS (in Lots 1-11)

Delivered London area.

1½ in. 4 Horizontal Panel Pattern 4 in. deal				
2 ft. 0 in. × 6 ft. 6 in.	each	1	12	0
2 ft. 3 in. × 6 ft. 6 in.	,,	1	13	0
2 ft. 6 in. × 6 ft. 6 in.	,,	1	14	0
2 ft. 9 in. × 6 ft. 6 in.	,,	1	16	6
2 in. do. but top panel open. Pattern 4 × G in deal				
2 ft. 6 in. × 6 ft. 6 in.	,,	2	9	0
2 ft. 9 in. × 6 ft. 6 in.	,,	2	11	6
2 in. Panel, top panel open. Pattern 2 × G in deal				
2 ft. 6 in. × 6 ft. 6 in.	,,	2	1	9
2 ft. 9 in. × 6 ft. 6 in.	,,	2	3	6

SUNDRIES

Delivered London area

1 in. Wood Wool Slabs, 6 ft. 0 in. × 2 ft. 0 in. in quantities of 1 ton (89 yds. to 1 ton)	per yd.		5	8
1½ in. do. (67 yds. to 1 ton)	,,		7	4
2 in. do. (52 yds. to 1 ton)	,,		8	11½
2½ in. do. (45 yds. to 1 ton)	,,		10	3
3 in. do. (39 yds. to 1 ton)	,,		11	5½
Quantities under 1 ton add 1d. per ½ in. of thickness.				
½ in. imported insulation Board, quantities over 5,000 sq. ft.	per 100 sq. ft.	2	2	6
¼ in. Hardboard do.	,,	2	1	6
⅛ in. do. do.	,,	3	2	6
⅛ in. Asbestos Flat Building Sheets	per yd. sup		3	2
Roofing Felt, 1-ply	,,		1	6
do. 2-ply	,,		1	9
Best Scotch Glue, in slabs	per ½ cwt.	5	0	0
do. pearl	,,	5	5	0
Croid Glue	28 lb.	2	6	0
Cut Nails 3 in. (1-ton lots)	per ton	58	5	0
do. 4 in. and up (1-ton lots)	,,	54	15	0
Wire Nails, 3 in. (4-cwt. lots)	per cwt.	2	16	3
do. 4 in. and up (4-cwt. lots)	,,	2	12	9

METALS

STEEL JOISTS, ETC.

Basis Joists—

6 in. × 5 in., 8 in. × 5 in., 8 in. × 6 in., 10 in. × 6 in. 12 in. × 6 in. plain cut to lengths delivered London area	per ton	38	11	6
Extra for sizes				
3 in. × 1¼ in., 4 in. × 1¼ in.	,,	3	10	0
3 in. × 3 in.	,,	2	10	0
4 in. × 3 in., 10 in. × 4½ in.	,,	1	10	0
5 in. × 2½ in., 5 in. × 3 in.	,,	1	15	0
4½ in. × 1½ in.	,,	3	5	0
5 in. × 4½ in. 7 in. × 3½ in. 13 in. × 5 in. ...	per ton		15	0
6 in. × 3 in. 24 in. × 7½ in.	,,	2	0	0
6 in. × 4½ in. 7 in. × 4 in. 8 in. × 4 in. ...	,,	1	5	0
9 in. × 4 in. 10 in. × 5 in.		1	0	0
12 in. × 5 in. 22 in. × 7 in.				
9 in. × 7 in. 10 in. × 8 in. 12 in. × 8 in.				
14 in. × 5½ in. 14 in. × 6 in. 14 in. × 8 in.				
15 in. × 5 in. 15 in. × 6 in. 16 in. × 6 in.	,,		10	0
16 in. × 8 in. 18 in. × 6 in. 18 in. × 7 in.				
18 in. × 8 in. 20 in. × 6½ in. 20 in. × 7½ in.				
Steel angles average price	,,	40	5	0
Steel tees average price	,,	41	5	0
Fabricated work delivered London—				
R.S. Joists cut and fitted	,,	54	0	0
Compound girders	,,	59	0	0
Stanchions	,,	64	7	6
Compound stanchions	,,	67	15	0
In Roof Work—Trusses and Purlins	,,	80	0	0
Average prices not for awkward work.				
Mild Steel Ferro-Concrete bars to BSS785 ex London				
Stock ⅜ in. diam., and upwards	,,	40	6	0
¼ in. diam.	...per ton extra	4	7	0
⅞ in. do.	,,	3	7	0
¾ in. do.	,,	2	9	6
½ in. do.	,,	1	12	0

MILD STEEL TUBES

Tubes to BSS1387 and Fittings. List prices and following discounts :

Galvanised Tube—	W.I. Fittings	Malleable Fittings
Class A — 1%		
Class B + 8½%	Light + 24%	Malleable List — 35% + 40%
Class C + 24½%	Heavy + 31½%	
Black—		
Class A — 21½%		
Class B — 11%	Light + 11½%	Malleable List — 35%
Class C + 1½%	Heavy + 19½%	

C.I. HALF-ROUND GUTTERS

Delivered London per yd. in 6-ft. lengths

	Gutters	Nozzles	Stop Ends
3 in.	3/4	2/11	/10½
3½ in.	3/7½	3/2	/10½
4 in.	4/8	3/7	1/3
4½ in.	5/1½	4/–	1/7
5 in.	5/9	4/4½	1/9

C.I.O.G. GUTTERS

3 in.	4/3	3/10½	/11½
3½ in.	4/9	3/10½	1/3
4 in.	5/3	3/11½	1/7
4½ in.	5/9	4/8	1/9
5 in.	6/2½	5/4	2/–

C.I. RAIN-WATER PIPES

Per yd. in 6-ft. lengths	Pipe	Bends	Branches
2 in.	6/9½	3/7	5/1
2½ in.	7/1	3/11½	7/–
3 in.	8/–	5/–	7/7½
3½ in.	9/–	5/11½	9/–
4 in.	10/6	7/3½	10/8

L.C.C. COATED SOIL PIPES

2 in.	8/–	6/1½	7/6
2½ in.	8/6	6/10	9/4½
3 in.	9/6	7/6½	11/2
3½ in.	10/7½	9/4½	13/0½
4 in.	12/1½	10/6	15/4

Above prices for gutters, rain-water and soil pipes for under 3 cwt. lot only. Lots over 3 cwt. see List No. 3200 dated May 1, 1952, plus 15% and tonnage allowance. 4-ton lots 5 per cent, 2-ton lots 2½ per cent.

L.C.C. COATED DRAIN PIPES

In 9-fts.

	cwt.	qr.	lb.	per yd.	Bends	Branches
4 in.	1	1	17	24/5	17/4	30/2
6 in.	2	0	1	36/3	36/–	61/9

ASBESTOS RAIN-WATER PIPES AND FITTINGS

Orders under £30 less 12½ per cent. discount.
Orders over £30 less 17½ per cent. discount.

		2 in.	2½ in.	3 in.	4 in.
Pipes 6-ft. lengths	...per yd.	3/9	4/–	4/10	6/5
Shoes	... each	2/5	2/8	3/2	4/3
Single Branches	... ,,	3/9	4/6	5/4	7/6
Bends square or obtuse	,,	2/8	2/11	3/9	5/4
Swan Necks 4½ in. proj.	,,	2/11	3/9	4/3	5/11
do. 6 in. do.	,,	3/2	3/9	4/10	6/5

ASBESTOS O.G. GUTTERS AND FITTINGS

		4 in.	4½ in.	5 in.	6 in.
Gutters 6-ft. lengths	...per yd.	3/7	3/11	4/8	5/7½
Drop ends	each	2/10	3/4	3/10	4/7
Stop Ends	,,	/10	/11	1/–	1/2
Angles	,,	2/11	3/5	4/1	4/10
Nozzles	,,	2/10	3/4	3/10	4/7
Union Clips	,,	1/5	1/8	2/1	2/5

ASBESTOS HALF-ROUND GUTTERS AND FITTINGS

		3 in.	4 in.	4½ in.	5 in.	6 in.
Gutters 6-ft. lengths	...per yd.	2/6	2/11½	3/0½	3/7	5/–
Drop ends	each	2/1	2/5	2/8	2/11	4/3
Stop ends	,,	/9	/10	/11	1/–	1/2
Angles	,,	2/5	2/8	2/11	3/2	4/3
Nozzles	,,	2/1	2/5	2/8	2/11	4/3
Union Clips	,,	1/–	1/1	1/2	1/4	2/–

METALS—*continued*

	Per ton basis in London £ s. d.
Iron—Staffordshire Crown Merchant Quality	41 17 6
Mild Steel Bars	37 14 0
Mild Steel Hoops	39 1 0

	Ex Merchant's Stock per ton Two-ton lots £ s. d.
Soft Sheets C.R. and C.A.—	
20 gauge	49 6 0
24 gauge	51 16 0
26 gauge	54 16 0
Galvanised Corrugated sheets 6 ft. to 9 ft.—	
20 gauge	55 12 6
24 gauge	59 2 6
26 gauge	64 7 6
Galvanised Flat sheets C.R. and C.A.—	
20 gauge	57 2 6
24 gauge	60 12 6
26 gauge	65 17 6

Plumbers' Brass Work, Copper, Zinc, etc.

Delivered in London area.

All per doz.	M.O.H. ¼ in.	⅜ in.	1 in.	1¼ in.	1½ in.	2 in.
Screwdown bib cocks Crutch head for iron	77/-	114/6				
Toilet bib cocks for iron ...	99/-	142/-				
Screwdown stop cocks for iron	66/-	95/9	188/-	323/6	462/-	815/-
do. with two unions for lead	89/-	132/-	234/4	419/-	554/6	1234/3
Double nut boiler screws ...	16/6	23/3	42/-	43/-	59/6	83/8
Heavy Croydon ball valves ...	68/3	155/3	237/7	433/6	614/-	
Plumbers' union brass lead to iron	17/4	21/-	34/9	60/6	74/6	145/3

	1¼ in.	1½ in.	2 in.	3 in.	3½ in.	4 in.
Caps and screws	29/9	36/4	52/9	82/6	105/6	137/6
Brass sleeves		27/6	27/6	49/6	66/-	67/-

	1¼ × 6 lb.	1½ × 6 lb.	2 × 7 lb.	3 × 7 lb.
Lead P. trap with brass cleaning screws	63/6	79/6	127/-	217/3
Lead S. trap do.	77/-	95/-	156/3	281/-

		s. d.
Solder		
Plumbers'	per lb.	3 5
Tinmen's	,,	4 2
Blow pipe	,,	4 3

Copper tubes BSS 659/1944 on the basic price of 34½d. per lb. plus gauge and manufacturing extras as follows. Minimum quantities, 3 cwt.

	Extra d.	Total per lb. d.
⅛ in. × 19 gauge ...	12½	46⅝
¼ in. × 19 ,, ...	10½	45⅝
1 in. × 18 ,, ...	9½	43⅝
1¼ in. × 18 ,, ...	8½	43⅝
1½ in. × 18 ,, ...	8½	43⅝
2 in. × 17 ,, ...	10½	44⅝

		£ s. d.
Rolled Copper sheets up to 48 in. wide, basic price plus gauge and manufacturing extras	per ton	355 15 0
Sheet Zinc, 10 gauge (25 SWG) 5 cwt. lots upwards	per cwt.	8 1 6
do. 12 gauge (23 SWG) do. ...	,,	7 19 6
do. 14 gauge (21 SWG) do. ...	,,	7 18 3
Brass tubes basic price, plus gauge and manufacturing extras	per lb.	2 3½

LEAD SHEET AND PIPES

Basis selling price in minimum one-ton delivery to one address in London or Home Counties

		£ s. d.
Lead Sheet, English, 3½ lb. substance and upwards	per ton	142 5 0
Lead Water Pipe in coils	,,	143 10 0
Lead Soil Pipe 10 ft. or over 2 in. to 4 in. dia. ...	,,	145 0 0
do. over 4 in. dia.	,,	147 0 0
Lead Gas or Untinned Compo pipe	,,	145 0 0
Extras over Basis for quantities under 1 ton		
5 cwt. and under 1 ton	per cwt.	2 0
3 cwt. do. 5 cwt.	,,	4 0
1 cwt. do. 3 cwt.	,,	6 0

Smaller quantities than 1 cwt. priced specially.

Supplying sheet lead and lead pipe to less than basis weights and cutting to sizes less than basis charged extra according to current trade schedule.

Allowance for Old Lead, collected £100 5s. 0d. per ton weighed at buyer's works.

PLASTER, etc.

		£ s. d.
Coarse Pink in 1-ton loads and over Delivered on Site	per ton	7 6 6
do. White do. do. ...	,,	7 14 3
Sirapite Coarse do. do. ...	,,	7 9 0
do. Fine do. do. ...	,,	7 17 0
Blue Lias Lime in 6-ton loads	,,	6 9 6
Hydrated Lime do.	,,	5 12 6
Lump Lime do.	,,	5 2 0
White Keen's or Parian Cement in 1-ton loads ...	,,	10 4 0
Pink Keen's or Parian Cement in 1-ton loads ...	,,	9 18 6
Granite Chips in 6-ton loads	,,	2 6 3
Hair	per cwt.	4 17 6
Gypsum Plaster Lath or Base Board ½ in. thick 600 yds. and over in one delivery. Delivered site ...	per yd.	2 2
1,200 yds.	,,	2 1½
Gypsum Plaster Wall Boards, 3 and 4 ft. wide, 6 to 12 ft., ½ in. thick, 600 yds. and over in one delivery. Delivered site	,,	2 5
1,200 yds.	,,	2 4½

PAINT AND DISTEMPER

Delivered London area		£ s. d.
Ceiling Distemper	per cwt.	1 7 6
Washable Distemper	,,	5 5 0
Gloss Paint	per gal.	2 10 0
Snowcem cement paint (in 1 cwt. drums)	per cwt.	3 11 0

Lead Products and Oils.

Ground White Lead, 1 cwt. kegs	per cwt.	8 18 0
Genuine White Lead Paint, 1-19 gal. lots in 1 gal. tins	per gal.	3 2 0
Genuine Red Lead, Dry, 1 cwt. keg	per cwt.	7 1 3
Genuine Linseed Oil Putty, 1 cwt. keg	,,	2 9 0
Size XD quality, 28 lb.	per tin	9 0
Raw Linseed Oil (5 gal.) Drums extra	per gal.	12 0
Boiled Linseed Oil (5 gal.) do.	,,	12 6

Sundries.

Turpentine substitute (5 gal.) drums extra	,,	5 6½
do. do. (40 gal.) do. do.	,,	4 8½
Solignum, Brown (5 gal. cans) Exterior	,,	6 6
Creosote (40 gal. barrels)	,,	2 0
Paste Powder (1 lb. packets)	per lb.	1 6
White Lining Paper	per piece	1 0

VARNISHES, etc.

Delivered London area.		£ s. d.
Oak Varnish, Outside or Inside	per gal.	1 12 6
Oak Pale Copal do.	,,	1 15 0
Hard Drying Oak for Inside	,,	1 17 6
Crystal Paper Varnish do.	,,	2 2 6
Eggshell Flat Varnish do.	,,	2 2 6
Finest Carriage Varnish	,,	2 10 0
Front Door Varnish	,,	1 17 6
Japan Gold Size	,,	1 10 0
Black Japan	,,	1 5 0
Brunswick Black	,,	1 0 0
Berlin Black	,,	1 5 0
Terebene	,,	1 5 0
Knotting (1 gal. bottles free)	,,	2 0 0
French and Brush Polish (do.)	,,	1 13 0

GLASS

Delivered London area.	Per ft. super s. d.
18 oz. Sheet Glass Ordinary Glazing Quality. Cut Sizes	5 7½
24 oz. ,, ,, ,, ,, ,, ,,	7½
26 oz. ,, ,, ,, ,, ,, ,,	10
32 oz. ,, ,, ,, ,, ,, ,,	1 1
⅛ in. Rolled Plate	9
⅜ in. and ½ in. Rough Cast	1 0
⅛ in. Figured Rolled and Cathedral, Standard patterns : White	9
do. Standard Tints	1 4½
do. Special Tints	2 9
⅛ in. Pinstripe, Hammerstripe, Reeded, Reedlyte and Luminating	1 1
¼ in. Wired Cast	1 2
¼ in. Georgian Wired Cast	1 2½
Hollow Glass Blocks—	Each
P.B.2 5½ × 5½ × 3⅞ in.	2 9
P.B.3 7½ × 7½ × 3⅞ in.	4 2
P.B.32 7½ × 7½ × 3⅞ in.	4 2
Radiused Corner Blocks to match up with—	
P.B.2	5 3
P.B.3	6 9
P.B.32	6 9
¼ in. Polished Plate Glass, G.G. Quality—	Per ft. super
In plates not exceeding 2 ft. sup.	3 7
,, ,, ,, 5 ft. sup...	4 5
,, ,, ,, 45 ft. sup.	5 1
,, ,, ,, 100 ft. sup.	5 6
¼ in. Polished Plate, extra sizes, *i.e.*, plates exceeding 100 ft. sup. or 160 in. one way or 96 in. both ways. G.G. quality—	
Not exceeding 135 ft. sup. or 250 in. one way or 135 in. both ways	8 4
Not exceeding 180 ft. sup. or ditto	11 3
Not exceeding 200 ft. sup., or ditto	16 0
Plates exceeding 200 ft. sup. prices on application.	
Substances other than ¼ in. Polished Plate at Special Prices.	

Quantity Tariff—Sheet and Sundry Glass.

The following prices apply to minimum quantities of one size and one pattern delivered by the manufacturer to one site at one time.

Description of Glass	Minimum quantity	Per ft. super s. d.
18 oz. sheet O.Q.	3,000	4½
24 oz. ,, ,, ...	2,000	6½
26 oz. ,, ,, ...	2,000	7½
32 oz. ,, ,, ...	2,000	10½
⅛ in. Rolled Plate	1,000	7½
⅛ in. Figured Rolled and Cathedral Standard Patterns, White	1,000	7½
⅛ in. Pinstripe, Hammerstripe, Reeded, Luminating and Spotlyte	1,000	10½
⅜ in. and ½ in. Rolled Plate or Rough Cast ...	2,000	10½
¼ in. Wired Cast, Hexagonal	2,000	11½
¼ in. Georgian Wired Cast	2,000	1 0½

The Builder

CURRENT RATES OF WAGES

AS FROM OCTOBER 4, 1954. **(Every endeavour is made to ensure accuracy but we cannot be responsible for errors.)**

KEY TO SCHEDULE OF GRADE RATES.

Grade Classification.	A	A1	A2	A3
Craftsmen	3/9	3/8½	3/8	3/7½
Labourers	3/3½	3/3	3/2½	3/2

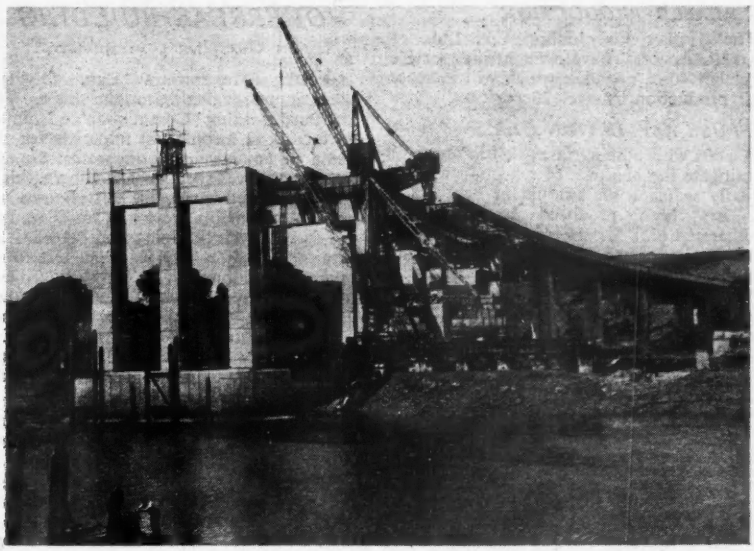
Town.	Grade.
Aberavon	A
Aberdare	A
Abergavenny	A
Abingdon	A2
Accrington	A
Addlestone	A
Aldeburgh	A2
Aldershot District	A2
Alfreton U.D.	A
Alnwick	A1
Altrincham	A
Amble	A1
Amersham	A1
Ammanford	A
Andover	A2
Ardingly	A2
Arundel	A2
Ascot	A2
Ashby-de-la-Zouch U.D.	A
Ashby Woulds U.D.	A
Ashford (Kent)	A2
Ashford (Middlesex)	A
Ashington	A
Ashtead	A
Ashton-under-Lyne	A
Aspatria and Brayton	A2
Atherstone R.D. (parts of)	A
Aylesbury	A2
Aylesby (Yorks)	A
Aylesham	A2
Bagshot	A2
Bakewell U.D.	A2
Banbury	A2
Barnard Castle U.D.	A
Barnoldswick U.D.	A
Barnsley	A
Barrow-in-Furness	A
Barrow-upon-Soar R.D. (exc. Thrussington A2)	A
Barry	A
Basford R.D. (exc. Willoughby-on-the-Wolds A1)	A
Basingstoke	A1
Bath	A
Batley	A
Baxterley	A1
Beaconsfield & District	A1
Beamish	A
Bearl	A
Bearpark	A
Beccles	A2
Bedale R.D.	A
Bedford	A
Bedlington	A
Bedwas	A
Beeston & Stapleford U.D.	A
Belper U.D.	A
Belton	A
Berkhamsted	A
Berrington	A1
Berwick District	A
Beverley	A
Bexhill-on-Sea	A2
Biggleswade	A2
Billericay	A
Billing	A
Billingham U.D.	A
Bilsthorpe	A
Birchington	A2
Birkenhead	*
Birmingham C.B.	†A
Bishop Auckland	A
Bishop's Stortford	A
Bispham	A
Blackburn	A
Blackpool	A
Blackwell R.D.	A
Blaydon U.D.	A
Blidworth	A
Blyth	A
Bognor Regis	A2
Boldon U.D.	A
Bolsover U.D.	A
Bolton	A
Bourne End	A1
Bournemouth District	A
Bracknell	A2
Bradford	A
Bradford-on-Avon	A2
Braintree	A1
Breconshire, County of...	‡A2
Brent Knoll	A
Brentwood	A
Bridlington	A
Brierfield	A
Brighouse	A
Brighton	A
Bristol	A
Broadstairs	A2
Bromsgrove U.D.	A
Brough	A
Broughton (Cheshire)	A
Buckley	A
Bungay	A2
Burnham-on-Crouch	A2
Burnley	A
Burton-on-Trent C.B.	A
Bury	A
Bury St. Edmunds	A1
Buxton	A
Byfleet	A1
Calder Valley	A
Cambridge	A
Cannock U.D.	A
Canterbury	A2
Cardiff	A
Cardiganshire, County of	‡A2
Carlisle	A
Carmarthenshire, Cnty of	‡A2
Caernarvonshire, Cnty. of	‡A2
Carnforth	A
Castleford	A
Caterham	A
Chapel-en-le-Frith	A
Charmy Down	A
Chatham & District	A1
Cheadle (Staffs) R.D.	A
Chelmsford	A
Cheltenham	A
Chepstow	A1
Chertsey	A
Chester	A
Chesterfield M.B.	A
Chesterfield R.D.	A
Chester-le-Street U.D.	A
Chichester	A2
Chippenham (inc. Chippenham Within and Hardenhuish)	A2
Chorley	A
Clacton	A1
Cleethorpes	A
Clevedon	A1
Cleveleys	A
Clitheroe	A
Coalville U.D.	A
Cobham (Surrey)	A
Colchester	A
Colne	A
Colwyn Bay	A1
Congleton	A1
Consett	A
Conway	A1
Cornwall, County of	‡A2
Coventry C.B.	A
Cranbrook	A2
Cranleigh	A2
Crawley (Sussex)	A1
Crewe	A
Cromer	A1
Crowborough	A2
Cuckfield	A2
Dalton-in-Furness	A
Darlington District	A
Darwen	A
Deal	A2
Denbigh Town	A2
Derby C.B.	A
Devizes	A2
Devon, County of	‡A2
Dewsbury	A
Didcot	A2
Diss	A2
Doncaster C.B.	A
Dorking	A
Dorset, County of (except-ing Poole, Swanage and Wimborne A)	A2
Dover	A2
Dovercourt	A
Driffield U.D.	A1
Droitwich M.B.	A
Dudley M.B.	A
Dunstable	A
Durham City	A
Eastbourne	A
E. Glam. & Mon. Val.	A
East Grinstead District	A2
Eastwood (Notts.) U.D.	A
Ebbw Vale & District	A
Edenbridge	A2
Ely	A2
Epping	A
Exeter	A
Fakenham	A2
Falmouth	A2
Fareham	A
Faversham	A2
Felixstowe	A1
Filey U.D.	A
Fleetwood	A
Flint	A
Folkestone	A2
Frinton	A1
Frome	A1
Gainsborough U.D.	A
Gateshead	A
Gillingham (Kent)	A1
Glossop	A
Gloucester	A
Gloucestershire, Cnty. of	‡A2
Godalming	A2
Goole M.B.	A
Gosport	A
Grantham M.B.	A
Gravesend	A
Great Yarmouth	A
Grimsby C.B. & R.D. (part)	A
Grimsby R.D. (remainder)	A2
Guildford District	A2
Guilsborough	A1
Guiseley	A
Halesowen M.B.	A
Halifax	A
Halstead	A2
Haresfield	A1
Harlow	A
Harpenden	A
Harrogate	A
Hartlepool	A
Harwich	A
Haslemere	A2
Hastings	A2
Hatfield (Herts.)	A
Haywards Heath	A2
Hemel Hempstead	A
Henley-on-Thames	A2
Hereford	A2
Herefordshire, Cnty. of	‡A2
Herne Bay	A2
Hertford	A
Hexham U.D.	A
Heysham	A
High Wycombe	A1
Highworth	A2
Hinckley U.D.	A
Hitchin	A
Hoddesdon	A
Horley	A2
Horsham	A2
Horwich	A
Huddersfield	A
Hull	A
Hunstanton	A2
Huntingdon (Staffs)	A
Ilkley	A
Ingatestone	A1
Ipswich	A
Isle of Sheppey	A2
Isle of Thanet	A2
Isle of Wight	A2
Jarrow M.B.	A
Keighley	A
Kendal	A
Kenilworth U.D.	A
Kettering M.B.	A
Keynsham	A
Kidderminster M.B.	A
King's Lynn	A1
Kingskerswell	A1
Kingsteignton	A1
Kirkham	A
Knaresborough U.D.	A
Knowle	A1
Lancaster	A
Leamington M. B.	A
Leatherhead	A
Leeds	A
Leicester C.B.	A
Leighton Buzzard	A1
Letchworth	A1
Lewes	A2
Lichfield M.B.	A
Lincoln C.B.	A
Littlehampton	A2
Liverpool	*
Llandudno	A1
Llanelly	A
London	*
Long Eaton	A
Loughborough M.B.	A
Louth M.B.	A2
Lowestoft	A
Loxton	A2
Luton	A
Lyneham (Devon)	A2
Macclesfield	A
Maidenhead	A1
Maidstone	A1
Maltby	A
Maldon (Essex)	A1
Malvern U.D.	A1
Manchester	A
Manningtree	A1
Mansfield M.B.	A
March	A2
Margate	A2
Market Harborough U.D.	A
Maryport	A
Matlock U.D.	A1
Melksham	A2
Melton Constable	A2
Melton Mowbray U.D.	A1
Merthyr	A
Middlesbrough	A
Middleton	A
Middlewich	A
Milford Haven	A1
Morecambe	A
Morley	A
Mundesley	A2
Nantwich	A
Nelson	A
Newark-on-Trent R.D.	A1
Newbury	A2
Newcastle-on-Tyne	A
Newcastle-under-Lyme	A
New Forest District	A1
Newmarket	A1
Newport, Mon.	A
Newport Pagnell	A2
Newton Abbot	A1
Northallerton Dist.	A
Northampton C.B.	A
North Shields	A
Norton Radstock	A1
Norwich	A
Nottingham C.B.	A
Nuneaton M.B.	A
Oakham U.D.	A2
Oldham	A
Ongar	A
Ormskirk	A
Ossett and Horbury	A
Oxford	A
Oxted	A1
Paignton	A1
Peterborough	A
" Soke	A1
Pickering	A3
Plymouth	A
Pontefract	A
Pontypridd District	A
Portishead	A
Portland Stoneyards	A
Portsmouth	A
Port Talbot	A
Preston	A
Pudsey	A
Pulborough	A2
Radnorshire, County of	‡A2
Ramsgate	A2
Rayleigh	A
Reading	A
Redcar B.	A
Redditch U.D.	A
Redhill and Reigate	A
Ripon	A3
Rochdale	A
Rochester	A1
Rotherham	A
Rugby M.B.	A
Saffron Walden	A2
St. Albans	A
St. Helens	A
St. Neots	A2
Salisbury City	A2
Salisbury Plain	A2
Sawbridgeworth	A
Saxmundham	A2
Scarborough	A
Scunthorpe	A
Selby	A
Sevenoaks	A1
Sheerness	A2
Sheffield	A
Shipley	A
Shoeburyness	A
Shoreham	A
Shrewsbury M.B.	A
Sittingbourne	A2
Skegness U.D.	A1
Skipton U.D.	A
Sleaford U.D.	A2
Slough	A
Smethwick C.B.	†A
Snettisham	A2
Somerset, County of	‡A2
Southampton	A
Southend-on-Sea Dist.	A
Southport	A
South Shields C.B.	A
Spalding U.D.	A2
Stafford M.B.	A
Staines	A
Stamford M.B.	A1
Stantonwick	A
Stevenage	A
Stockport	A
Stockton R.D.	A
Stockton-on-Tees	A
Stoke-on-Trent C.B.	A
Stoke Orchard	A1
Stourbridge M.B.	A
Stourport U.D.	A
Stowmarket	A1
Stratford-on-Avon M.B.	A
Sunderland District	A
Sunningdale	A1
Sutton Coldfield M.B.	A
Swaffham	A2
Swanage	A1
Swansea	A
Swindon	A
Swinton U.D.	A
Tamworth M.B.	A
Tenterden	A2
Tewkesbury	A1
Thames Haven	A
Thetford	A2
Thorpe Bay	A
Thurrock U.D.C. Area	A
" North of, to Billericay	A
Tilbury	A
Todmorden	A
Tonbridge	A1
Torquay	A1
Totnes	A1
Trowbridge	A2
Tunbridge Wells	A1
Tynemouth C.B.	A
Uppingham (Salop)	A1
Uttoxeter U.D.	A2
Wakefield	A
Wallsend B.	A
Walsall C.B.	A
Walsden	A
Walton-on-Naze	A1
Ware	A
Warminster	A2
Warrington	A
Warwick M.B.	A
Wellington U.D.	A
Wells (Norfolk)	A2
Welwyn	A
Welwyn Gar. City	A
West Bromwich C.B.	A
Westbury	A2
Westcliff-on-Sea	A
Westerham	A1
Weston-super-Mare	A1
Weybridge	A
Weymouth	A1
Whitby U.D.	A1
Whitstable and District	A2
Wickford	A
Widnes	A
Wigan	A
Wigton	A2
Willington	A
Wilmslow	A
Wilts. County of	‡A2
Winchester	A1
Windermere	A2
Windsor and Eton	A
Wisbech	A2
Witham	A1
Woking (District)	A1
Wokingham	A2
Wolverhampton C.B.	A
Woodbridge	A2
Worcester C.B.	A
Workington	A
Worksop M.B.	A
Worthing	A2
Wrexham (incl. Cefn)	A
Wroughton	A1
Wylam	A
Wymondham	A2
York	A

For Birkenhead, Liverpool and London the rates are:—Craftsmen, 3s. 10½d.; Labourers, 3s. 5d. In the case of London the rate beyond the 12-mile radius is:—Craftsmen, 3s. 10d.; Labourers, 3s. 4½d. † Plus 2d. per working day. ‡ This is the County rate and applies except where higher grades are stated.

NOTE.—Carpenters and Joiners providing own tools when employed in establishments operating under the Supplementary Rules for Woodworking Factories and Shops, receive 2d. per day; when employed on other building industry work, 4d. per day.

WOMEN'S RATES.—In all districts throughout the country the rate of wages for women engaged in craft processes is 2s. 10½d. per hour. Women engaged on work other than craft processes, 2s. 6½d. per hour. These rates took effect on January 3.

For Building Trade Wages in Scotland see page 116.



Work in progress on the central approach span of the Neath by-pass river viaduct.

STUD WELDING IN BRIDGE CONSTRUCTION

THE two plate-girder and reinforced concrete viaducts which form part of the Ministry of Transport's Neath by-pass project in Glamorganshire are the first bridges in Britain where extensive use has been made of stud welding equipment in the construction. Techniques developed by the Crompton Parkinson stud welding organisation for securing the concrete road slabs to the girders, and also for fixing the cable ducts to the girders, were adopted by the Cleveland Bridge and Engineering Co., Ltd., the contractors.

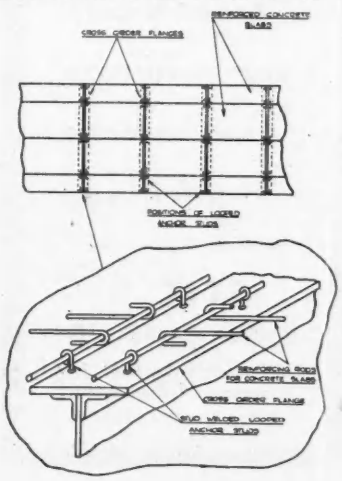
The two viaducts are similar in construction and, together, extend for some five-eighths of a mile. Dual roadways, cycle tracks and pedestrian pavements are carried. The decks of the viaducts consist entirely of reinforced concrete, and this is supported on the cross girders. The roadways are carried on concrete slabs.

In securing the concrete slabs to the girders special looped studs were stud welded in pairs to the cross girder flanges at 4 ft. intervals. Straight reinforcing rods were then passed through the loops, and the hooked ends of the longitudinal reinforcing bars in the concrete slabs were anchored to them.

Above: A stud welding operation on the viaduct. Right: The arrangement for securing the concrete slabs.

The stud welding equipment consisted of a transformer-rectifier, a portable controller and a hand tool, all of which could be taken close up to the place of working. A weld cycle was possible in a matter of seconds and it was possible to carry out the complete operation with the concrete shuttering in position.

It was also necessary to attach cable ducts to the central main girder, where a gutter was formed between the reinforced concrete slabs of the main roadways, and this had to be done with the slabs already cast in position. It was asserted that manual arc welding would result in damage to paintwork on the inaccessible underside of the flanges. It was also believed that there would be a risk of distorting the girder flanges. Stud welding, on the other hand, with its relatively low heat input, should not cause any significant distortion; nor should it cause any adverse heat effects on the underside of the flanges. Any alternative method of attachment would have required access to the underside of the bridge, and this would have involved difficult staging operations throughout almost the entire length of each span. By avoiding this, a considerable saving was effected. In addition, there were further economies due to the speed of the stud welding operations involved. The consultants for the Neath by-pass project were Rendel, Palmer and Tritton.


REINFORCED CONCRETE SLABS
CROSS GIRDER FLANGES
POSITIONS OF LOOPED ANCHOR STUDS
REINFORCING RODS FOR CONCRETE SLABS
CROSS GIRDER FLANGE
STUD WELDED LOOPED ANCHOR STUDS

TRAINING COURSES IN CONCRETE WORK

Programme for 1955

THE increased use of concrete in building and the development of new structural techniques which call for high quality concrete, have in recent years directed widespread attention to the improvement of the standard of concrete design and practice.

It was with the two aims—of raising the general standard of concrete work, and of helping engineers and supervisors to keep abreast of recently developed techniques—that the Cement and Concrete Association instituted its training courses five years ago. The following programme of courses has been arranged for 1955:—

Structural concrete for supervisors.—January 24-28, January 31-February 4, and March 7-11.

Concrete road and soil-cement construction for supervisors.—April 18-22, and April 25-29.

Properties of concrete, mix design, and quality control for engineers.—May 2-6, and May 16-20.

Soil-cement construction for engineers.—June 6-9, and June 13-16.

Structural concrete for engineers.—June 27-July 1, July 4-8, and July 25-29.

Concrete road construction for engineers.—September 5-9, and September 19-23.

Concrete products for members and employees of firms subscribing to the research committee for the cast stone and cast products industry.—October 17-21, and October 31-November 4.

Advanced structural concrete for engineers —November 14-18, and November 28-December 2.

During the week commencing July 18, those lecturing at technical schools and colleges to students sitting for the City and Guilds certificate in concrete practice are being invited to attend a series of discussion meetings and demonstrations. Details from the Association at 52 Grosvenor-gardens, SW1.

EASTERN FEDERATION

Election of Officers

AT THE Eastern Federation of Building Trades Employers' 36th annual general meeting, held at Cambridge on January 7, the following officers were elected for 1955:

President, B. T. Henman, JP, MIOB (Luton); senior vice-president, R. E. Perrott, MIOB (Chelmsford); junior vice-presidents, R. G. Carter, JP, MIOB (Norwich), H. G. Holmes, MIOB (Gt. Yarmouth), and C. C. Wiggins (Thundersley); immediate past-president, A. E. Desborough, JP (Peterborough); honorary treasurer, D. M. Chaston (Hoddesdon).

The meeting was well attended, and the principal guest was Mr. G. W. Grosvenor, National president, who addressed the meeting. Other visitors included Mr. S. Hearder, National director; Mr. R. S. Williams, president of the LMBA; and Mr. G. H. A. Hughes, director, LMBA.

TRADE NEWS

PRICE REDUCTION

Increased production has made it possible for W. Crockatt and Sons, Ltd., of Glasgow, to reduce the price of their floor sanding machine from £140 to £125. This price reduction becomes effective immediately.

FIBRE-GLASS SHEETING

A range of fibre-glass resin-bonded sheeting is being marketed under the trade name of "Glascorein" by Thermo-Plastics, Ltd., Luton-road Works, Dunstable, Beds. The material is understood to be as strong as metal sheets, while half their weight.

PAINT INFORMATION CENTRE

A technical information centre will be opened at Wolverhampton, on January 19, by Mander Brothers, Ltd., St. John's-street, Wolverhampton. It will comprise a factual display of technical information on paint problems encountered in the industry, as well as alternative paint finishes.

SYNTHETIC RESIN GLUES

Some notes on new timber roof trusses built with their "Aerolite" 300 are contained in Part 1 of "Synthetic Resin Glues in the Building Industry," published by the technical service department of Aero Research, Ltd., as No. 142 of their series of technical bulletins. Copies are available from the company at Duxford, Cambridge.

Some further notes can be found in No. 143 of the series.

PROTECTIVE CLOTHING

The contractors' tools department of George Cohen Sons and Co., Ltd., Woodlane, W12, have issued a further catalogue listing the range of protective clothing of all kinds which the company handles.

NEW TELEPHONE EXCHANGE

A new 200-line private automatic exchange to facilitate administration has been installed by Communication Systems, Ltd., Strowger House, 8, Arundel-street, WC2, at the new London offices of Richard Costain, Ltd. A secretarial service facility makes it possible for an executive to switch calls that he does not wish to answer through to his secretary, and at the same time leaves him with a second line for other incoming or outgoing calls. A similar double-line facility is available to the secretary.

OFFICE LIGHTING

To meet diverse lighting requirements in the new office block recently completed by the AC-Delco Division of General Motors for their Southampton factory, three different forms of illumination have been provided by "Ediswan" fittings of special design. For the managing director's office, a hollow square laylight panelled with diffusing glass was fitted flush with the acoustic tile ceiling. The panels conceal eight 125w. 8-ft. warm white Royal "Ediswan" fluorescent lamps. Separate switching provides four levels of illumination. For the general office, individual recessed reflectors for fluorescent lamps were used, each with detachable louvres and internal panels allowing access for maintenance. For the drawing office it was decided to make use of cold cathode lighting. In both the general offices, the lighting system was designed to allow free use of temporary partitioning.

INCREASED PRODUCTION

The Timber Fireproofing Co., Ltd., of Market Bosworth, have brought into service a further 40-ft. cylinder, which will increase their production by over 20 per cent.

DIFFUSE REFLECTION GLASS

A glass with both surfaces lightly obscured to mitigate the nuisance of reflection without actually reducing the amount of light reflected has been produced by Pilkington Brothers, Ltd., St. Helens, Lancs. It is available in substances 2.6/3.2 mm. and upwards, and at present in sizes up to 18 in. by 12 in., and can be obtained toughened if required. Bent glass to approved curves is available as well, and the glass is particularly suitable for meter and gauge glasses where the observer is unable to move into a position to avoid reflections.

PERSONAL COLUMN

MR. T. H. HOMER has been appointed manager of the London branch office recently opened by F. Hills and Sons, Ltd., Stockton-on-Tees, at 28, Victoria-st., Westminster, SW1. (Tel.: Abbey 6542). A door depot has also been opened by the firm at Livingstone Wharf, 50, Ferry-st., Millwall, S14.

MR. J. S. SHEPPARD has been appointed as joint sales manager of Permanite, Ltd., roofing felt and dampcourse manufacturers.

MR. R. W. MUGFORD, director of Duncan Tucker (Tottenham), Ltd., has now retired. At an informal sherry party at their works MR. H. TUCKER, chairman, made two presentations to him: a silver cake stand from the directors and staff; and a silver salver from the firm. Mr. Mugford was president of the English Joinery Manufacturers' Association from 1944 to 1946.

Gilbert-Ash, Ltd., have announced the appointment of MR. S. BOND and MR. J. M. GILLHAM, MC, as directors of the company.

MR. H. LUNDY, BSc, has joined the Timber Fireproofing Co., Ltd., of London, Market Bosworth and Glasgow, and has taken charge of the technical service department, Oxylene Boram Division.

STIC B

A decorative and waterproofing treatment for concrete and cement rendering

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PAINT SALES LTD.
47 Whitehall, London, S.W.1
Telephone: WHitehall 9958

OVERSEAS BUILDING

[*From Our Own Correspondents*]

Australia.—Melbourne's £2m. Olympic Village is now beginning to take shape. The Victorian Housing Commission's Holmesglen factory is turning out materials for the scheme at an ever-increasing rate. On the 142-acre Village site, at Heidelberg, eight miles from Melbourne, the first houses are going up, gas mains are being installed, and 8,000 ft. of sewerage piping is being laid. In its finished form it will feature latest town-planning developments. The Village, earmarked for private housing after the Games, will have over 700 brick and concrete houses of various types, as well as three training ovals, a restaurant, canteen, bank, post office, medical and dental centre, and other facilities.

Colombia.—The Government of Colombia has created an Autonomous Regional Corpn. for the Cauca Valley, modelled on the TVA. Its first objects are the production and distribution of electric power, and the proper use of the valley's water resources. Dr. Lillienthal, who was associated with the TVA, has been appointed adviser to the President of Colombia on this project . . . Tipton de Colombia has been contracted to prepare engineering studies for a hydro-electric plant on the River Ponce to supply the city of Bucarmanga. In this connection it is of interest to note that a director of the German Siemens electrical firms has visited the Colombian Siemens company to study the possible developments of its business in that country.

The first contract for the National Telecommunications Scheme has been awarded to the Ericsson group. It is understood that the contract was negotiated during the visit of the Swedish trade mission. The construction of most of the new buildings required in the major cities for the new work has begun . . . Contractors in the UK should note that a Colombian Government Decree issued recently states that the Municipal Development Institute is to cease operation from the beginning of 1955. The municipalities and departments themselves will now be placed in funds to carry out their own projects.

The Bogota Municipal Waterworks have returned to their previous plan for financing their expansion scheme locally, and have turned down several foreign offers. The city's public utilities are to be organised into an independent corporation. Although this step has been taken there is still every likelihood that materials will be imported . . . Cali's waterworks development, for which the contract was awarded to Emil Degremont, of France, will cost about £2m., payable over seven years, and will render the city's water supply sufficient for a million inhabitants.

The city of Cartagena has sought financial assistance from the Government to initiate work on a sewage system . . . The Housing Credit Institute has acquired land to build 1,000 economical-type middle-class houses in Cali.

The Ministry of Health is having built, at a cost of £5,000 each, 10 water-borne health centres for the navigable rivers of Colombia . . . Two officials of the Bank of the Republic, in charge of the National salt monopoly soda plant, have returned from Europe after studying ways and means of establishing a salt refinery and an electrolytic caustic soda plant . . . The Medellin glass factory is to begin the construction of a new plant near Bogota.

It is now reported that the American industrialist, Henry Kaiser, who was recently in Colombia, is interested in a number of projects, among which are the Boyaca cement plant proposed by the Industrial Development Institute; a motor assembly plant, possibly in Cali; a steel strip mill to be erected in Bogota; and coal-burning electricity plants in Valle . . . A tractor plant and an electrical goods factory may be established in Colombia in 1955. Swedish firms are said to be behind these projects . . . The Public Works Department of Antioquia proposes to build a bridge over the River Cauca on the new trunk road to Cartagena at an estimated cost of £300,000.

The Department of Caldas has revived the five-year-old project for the continuation of the Western trunk road to the Pacific where a new port is to be built on the bay of Coqui. A French firm is reported to have offered to survey and build both . . . The Coffee Bank has agreed to lend the Department of Valle del Cauca $ US 600,000 to buy machinery and equipment for the construction of roads in the coffee-growing area of the department . . . Tolima is receiving a loan from the Coffee Bank for the construction of 280 kms. of country roads. Holland and the USA are both known to be interested in the many road projects which are being nationally sponsored.

Paraguay.—A company has been formed in Asuncion, Paraguay, for the preparation of plans, construction, exploitation and administration of the proposed water and drainage works of the city following the announcement that the Import-Export Bank had earmarked nearly £3m. for the purpose. It is reported that six US firms are offering plans for the waterworks, and representatives from some firms have already visited Asuncion.

The Philippines.—The Reynolds Corp. of the USA and their subsidiary, the Reynolds Philippine Corp., have announced that, financed jointly by Filipino and American capital, a £1m. aluminium manufacturing plant will be established in the Manila district. The new plant will manufacture aluminium sheets, tin foils and materials from which aluminium household articles can be made. . . . A factory for the manufacture of steel wool is to be sponsored by Shriro (Philippines), Inc. Tenders will be issued shortly.

The Philippines subsidiary of Union Carbide, National Carbon Co., is to construct a factory for the manufacture of flashlight batteries. The Philippine American Insurance Co. is financing the project. . . . A new factory for the manufacture of gas stoves and truck and car parts is to be erected by Inter-Island Gas Service. . . . Marvex Commercial Co. are planning a factory for the manufacture of bicycle tyres and other rubber goods. The building is now being designed and tenders will be issued some time between now and June.

Rhodesia.—Excavations have begun for the 14-storey Central African Currency Board building in Jameson-avenue, Salisbury. This is intended to house a Central Bank for the Rhodesian Federation. Building should be completed in 27 months' time.

Spain.—The tempo of air base construction in Spain is quickening. According to the Head of the US Construction Bureau in Spain the first four air bases will be completed by the end of this year. Invitations to tender for the runways at the naval-air base at Rota have still not been issued but a second call for bids for the supply of 31,000 tons of cement for the Zaragoza air base was made direct to certain selected suppliers. It is understood that Belgian suppliers quoted the lowest price.

The construction of an airport at Iviza, in the Balearic Islands has been officially declared to be of urgency and plans are being prepared by airport designers. . . . About £15m. has been subscribed for public works, roads, railways, housing, the National Institute of Industry and development work in Spanish Morocco.

Tasmania.—Over £1m. has been allocated by the Tasmanian Government for the building of schools. New suburbs are being planned to cope with the rapidly expanding population, and each suburb will have its complement of schools. Tenders have already been called for Launceston High School, Bellerive, Gormanston, Myrtle Park, Pioneer and Pyengana schools. Offers can be sent direct to the Tasmanian Ministry of Education at Hobarf. There is keen competition for these contracts.

Turkey.—A public company is to be set up in Turkey to finance and carry out plans costing £4,000.000,000(Turkish) and taking ten years, which will give the country an up-to-date medical service. According to the Minister of Health 347 health centres and dispensaries will be set up as well as 16 sanatoriums, 16 hospitals for the treatment of mental diseases, two schools for nurses, three radiology research institutes and a centre for tropical diseases.

A large-scale programme for the development of the town of Murgul is being implemented, and £300.000(Turkish) has been set aside for the social works to be carried out by the Coruh Provincial Government. . . . Materials for the second stage of the construction of the sulphuric acid plant at Murgul have arrived in Turkey and those for the third stage are expected shortly. The plant will be completed by the end of this year. . . . A scheme for further power-stations is being discussed by Government specialists.

BOOKS FOR BUILDERS

HOW TO ESTIMATE
By JOHN T REA
The new 11th edition has been brought up to date to September, 1950, with tables giving cost increases for materials and labour for 1936-7, 1939 and 1944-50. Over 680 illustrations. *21s net (by post 21s 10d.)*

DRAINAGE AND SANITATION
By E H BLAKE
10th Edition just published.
Revised and re-illustrated
"This has become a standard volume covering in a concise and compact measure the whole subject." – *The Engineer*
15s net (by post 15s. 9d.)

FLETCHER'S QUANTITIES
Revised by A E BAYLIS
12th Edition revised
This famous work presents, in tabulated form the methods of the valuation and measurement of building and engineering work. 700 pp. Many diagrams. *30s net (by post 31s.)*

THE PRINCIPLES OF STRUCTURAL MECHANICS
By PERCY J WALDRAM
3rd Edition revised
"The success of the book depends not merely on the author's obvious mastery of his subject but even more on his uncommon gift of lucid explanation" – *The Architect's Journal*
18s net (by post 18s 9d.)

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Retail Dept.
15 North Audley Street, London, W.1

FORGED BRASS FITTINGS

* The Great Northern Trading Co., 406, Queen-street, Brisbane, Australia, would like to get in touch with UK manufacturers of forged brass fittings suitable for refrigeration supplies, e.g., brass pipe fittings and joints for cold rooms. They do not require extruded brass fittings.

Manufacturers interested in this inquiry should communicate direct with the Great Northern Trading Co., giving full details of their offers. Telephone inquiries to Chancery 4411, ext. 776, quoting ref. ESB/29394/54.

BUILDING RESEARCH, AUSTRALIA

Design for Climate: Some Notes on the Design of Dwellings for Australian Cold-Winter Climates (number SB 32) has recently been published by the Department of Works, Commonwealth Experimental Building Station, PO Box 30, Chatswood, NSW, Australia.

These notes are the third in the series which discuss the design of dwellings in relation to climatic factors, and may be obtained from the Building Research Liaison Service, PO Box 2807 AA, Melbourne, Australia.

UGANDA BUILDING ASSOCIATION

The formation of the Uganda Association of Building and Civil Engineering Contractors, PO Box 2691, Kampala, Uganda, has recently been announced. It is understood that a considerable number of building contractors are members. The objects of the association include assisting and co-operating with the government in the setting up and implementation of an approved scheme of apprentice training for African craftsmen. At the first general meeting Mr. J. A. Sinclair was elected chairman, and Mr. Kehar Singh Kalsi, vice-chairman.

PLASTIC TILES

* Nassau Electric Co., Ltd., PO Box 1123, Nassau, Bahamas, would like to represent in the Bahamas a UK manufacturer of tiles similar to an American product, which appears to be a thermoplastic or composition tile, and glossy plastic tiles.

The American tiles, which are available in a wide range of colours, are 9 in. square and cost five cents each fob American port. A sample of the American product will be sent out on loan in order of receipt of application.

Manufacturers interested in this inquiry should write direct to the Nassau concern with details of their offers. Telephone inquiries to Chancery 4411, Ext. 776, quoting ref. ESB/29876/54.

STEEL ROOF DECKING

* The Consolidated Steel Corporation, Ltd., 33, South Wharf, Saint John, New Brunswick, Canada, would like to get in touch with a UK manufacturer of steel roof decking and open web lightweight all-welded steel joists (light girders).

The firm state that the girders required are usually spaced at maximum centres of 24 in. to carry 2-2½ in. concrete slabs. They are interested in both short and long spans up to 50 ft. to 60 ft.

Manufacturers interested in this inquiry should write direct by air mail to Mr. Watt, of the Saint John company, giving full details of their offers and quoting cif prices in Canadian dollars. Telephone inquiries to Chancery 4411, Ext. 776, quoting ref. CRE/17489/53.

* From the Board of Trade Special Register Information Service.

The SCOTTISH BUILDER

Planning Act Claims

FORMS of application for compensation payments to landowners under the Town and Country Planning (Scotland) Act, 1954, which came into operation on January 1, 1955, are now available. The persons eligible to apply for payments are those who hold established claims under the Town and Country Planning (Scotland) Act of 1947, and have sustained loss of development value through the operation of the provisions of that Act relating to planning restrictions, compulsory purchase, payment of development charge and certain other ways.

Claims for compensation for planning restrictions are the responsibility of the Department of Health in Scotland. Copies of the forms and of an explanatory leaflet may be obtained from local planning authorities, the District Valuers or from the Department, York Buildings, Queen-street, Edinburgh, 2.

Payments will also be made by the Central Land Board to people holding established claims (under the 1947 Act) who have in a variety of ways been affected adversely by the provisions of the 1947 Act. Detailed information is given in an explanatory leaflet (Form U.1/A) which can be obtained from the office of the Central Land Board or from District Valuers' offices.

Persons who consider that they are entitled under the Act to payment in respect of any event before January 1, 1955, and have not received an application form should apply without delay to the Board at 102 George-street, Edinburgh, 2.

George-square; Glasgow

A PROPOSAL that artists, architects and others be invited to submit designs and sketches for an open competition to improve the setting of Glasgow's George-square was heavily defeated at a meeting of the corporation on January 6. Only 10 members supported the proposal, which was made by COUNCILLOR W. L. TAYLOR, Labour member for Pollokshaws. The recommendation of the Parks Committee that no further action be taken regarding the removal of the statues in the square was approved.

Mr. Taylor thought his suggestion might overcome the difficulties felt by some members about the removal of the statues. The subject had created a good deal of public comment, and one of the things that bothered many people was the traditional attachment to the statues. There was agreement, he thought, that the layout of George-square should be improved and everything done to beautify the site. If they held an open competition they could retain the statues or rearrange them, or they might even agree to take them away altogether.

Opposing the suggestion, COUNCILLOR A. S. WARREN (Prog.), reminded the corporation that the estimated cost of moving the statues from George-square had been put at £13,000. To tarmac the area would involve a further expenditure of between £50.000 and £60,000, and he felt they could spend the money in a much more useful way.

Describing himself as a believer in tradition, LORD PROVOST T. A. KERR appealed to members not to think of removing the statues. He could name them all, and give the reasons why they were erected. It would be a bad day for the city and the nation if they ever reached the materialistic point of view which favoured the abolition of tradition and sentiment.

Grants for Old Buildings

THIRTY GRANTS have been approved by the Minister of Works for the repair and maintenance of buildings of outstanding historic or architectural value in Scotland as a result of the activities of the Historic Buildings Council for Scotland. This is reported in the ninth report, covering the year 1954, of the Scottish Regional Group of the Council for British Archæology. Mr. David Watson points out that the main function of the Historic Buildings Council (of which he is secretary) is to advise the Minister of Works on applications for grants, and at the time of writing it had recommended, and had had approved, 30 separate grants covering large country houses and castles, small houses of distinction, mainly in towns, town halls, and groups of small houses which, although not individually distinguished, are, in their group concept and setting, characteristically and traditionally Scottish and eminently worthy of preservation.

Repair grants for eight further Scottish buildings have been announced by the Historic Building Council for Scotland.

The buildings, recommended for grants by the council and approved by the Minister of Works, are the Weaver's Cottage, Kilbarchan; Kellie Castle, Fife; Kintore Town House, Aberdeenshire; Winton Castle, East Lothian; Drum Castle, Aberdeenshire; Loudoun Hall, Ayr; Craigievar Castle, Aberdeenshire; and Gargunnock House, Stirlingshire.

Civic Architecture Medal

MR. JOHN B. MCROBERT, of Clifton-road, Aberdeen, was presented with the Aberdeen Corporation medal for civic architecture by the Lord Provost, the Rev. Professor J. M. Graham, at a recent meeting of Aberdeen Town Council. The subject of the competition was "Amphitheatre, swimming pool, and beach development at Aberdeen."

East Kilbride Film

A DOCUMENTARY film for the East Kilbride Development Corporation, showing the progress and development of the new town over the past six years, has been made by the Thames and Clyde Film Co., Ltd. Apart from its value as a film record of the work which has been undertaken, the film provides a permanent record of the background to the creation and construction of a new town. The première was staged at the Film Society Theatre, Edinburgh, on December 23, before an audience which included Commander T. D. Galbraith, Sir Patrick Dollan, chairman of East Kilbride Development Corporation, and Major-General Dickson, manager.

A Permanent Cure for SMOKY CHIMNEYS

The 'Ventamatt' prevents down-draught and increases up-draught, irrespective of wind direction. There are no moving parts, no small holes to get choked and the design is of the straight through type to facilitate sweeping. Specified and used by Public Authorities, Architects, Builders and Property Owners everywhere.

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VENTAMATT

Down-Draught Preventing CHIMNEY POT

Sole Manufacturers:

AVIS ENGINEERING CO. LTD.,

Ley Street, Ilford, Essex. Tel. Ilford 2021

46/25

SCOTTISH BUILDING TRADE WAGES

FOLLOWING are rates of wages authorised by the Scottish National Joint Council as from May 24, 1954, They apply to the whole of Scotland, including the islands of Orkney, Shetland, etc.

Grade A: Craftsmen, 3s. 9d.; Labourers, 3s. 3½d.

For apprentices, the rates are:

Year	Percentage of Craftsman's rate	For week of 44 hours. s. d.
1st	25	41 3
2nd	33½	55 0
3rd	50	82 6
4th	66½	110 0
5th	75	123 9

For female labour, the rates are:

	s.	d.
Operatives on craft operations (at end of probationary period)	3	3½
Operatives on labouring operations (at end of probationary period)	3	0

NEW BUILDINGS

Aberdeen.—Corpn. is preparing plans for new pavilion-clubhouse (estimated cost £9,800) at Galnagest golf course. The architect is Alexander B. Gardner (F), Council Offices, Broad-st., Aberdeen.

Aberdeenshire.—CC has plans in hand for the erection of 28 approved houses at Dumoak and Commond. The County A is Alexander Macgill, 25, Union-ter., Aberdeen.

Airdrie.—Corp. has plans in hand for 80 houses at Craigneuk housing site. The plans are to be submitted to the Scottish Dept. of Health for approval. The Council A is Harry Shaw, Master of Works Offices, Royal Bank-bldgs., Graham-sq., Airdrie.

Beith.—Ayrshire CC has plans in hand for a fire station. The County A is Robert G. Lindsay (F), County-bldgs., Wellington-sq., The Sandgate, Ayr.

Coatbridge.—Lanarkshire CC has had plans prepared and submitted to the Dept. of Education for Scotland for St. Bartholomew's Catholic School. The architect is William R. Watt (F), Education Offices, Albert-st., Motherwell-Wishaw.

Edinburgh.—F. W. Woolworth, Ltd., Liverpool, have purchased the Palace Cinema on Princes-st., which is to be demolished and new warehouse premises erected on the cleared site. Plans are to be prepared by their staff architect, Martins Bank-bldgs., Water-st., Liverpool.

Glasgow.—Plans prepared for the Catholic Archdiocese of Glasgow, for new church halls, etc., at Drumlochy-rd., Ruchaxie, have been approved. The architects are Reginald Fairlie & Ptnrs. (F&A), 7, Ainslie-pl., Westend, Edinburgh.

Glasgow.—Plans prepared and approved for Elephant Cinemas, Ltd., 148, St. Vincent-st., for alterations and additions at the Elephant Cinema, Kilmarnock-rd., Newlands. The architect is Gavin Paterson (A), 147, West Regent-st., Glasgow, and 6, Cadzow-st., The Cross, Hamilton.

Glasgow.—Plans have been prepared and approved for alterations and additions for Samuel Dow, Ltd., Clyde-st., to be carried out at Fox-st., Govanhill. The architects are Beveridge & Galloway (A&A), 257, West George-st., Blythswood-sq., Glasgow.

Glasgow.—Plans prepared and approved for alterations and additions for William Timpson, Ltd., North Park, Kettering, to be carried out at The Trongate, for which the firm's own staff architects, Empire House, Great Ducie-st., Manchester, are responsible.

Glasgow.—Corpn. and the Scottish Ministry of Works are negotiating for the transfer and purchase of ground at 116 to 122, Nelson-st., and 53 to 57, Tradeston-st., for the erection of a new post office training school for which plans are in hand.

Glasgow.—Plans have been prepared by their own architects and approved for building in Bellahouston Park for the BBC, Broadcasting House, Portland-pl., W1.

Greenock.—Plans prepared and approved for new Social Club at Union-st. for John Hastie & Co., Ltd., engineers, Greenock.

Island of Islay.—Argyllshire CC has plans in hand

for a new public school. The architect is William R. Tocher (F), and the QS is D. Bryden Macfarlane Johnstone, FRICS, County Offices, Old Cowal Hotel, Alexandria-parade., Dunoon.

Rothesay.—Buteshire CC has appointed The British Reinforced Concrete and Engineering Co., Ltd., Glasgow, as consultants for the reinforced works in connection with the new Rothesay Academy to replace the one destroyed by fire and for which plans are being prepared.

Stirling.—Plans prepared and approved for corporation scheme of 26 houses at Site No. 3 at Bakerst. The Council A is W. H. Gillespie, Master of Works Offices, Municipal-bldgs., Abbeypark, Stirling.

The Builder

FUTURE CONSTRUCTION

Full details of Public Appointments open will be found in the Advertisement pages of this and previous issues.

CONTRACTS OPEN

For some contracts still open but not included in this list see previous issues. Those with an asterisk are advertised in this number. The dates at the heads of paragraphs are those for the submission of tenders; a dagger (†) denotes closing date for applications: the name and address at the end refer to the person from whom particulars may be obtained.

BUILDING

JANUARY 17.

***Northumberland CC.**—Welfare centre, etc., and ambulance garage, South Broomhill. County A, Newcastle upon Tyne. Dep. £2 2s.

JANUARY 19.

***†Leeds Reg. Hosp. Bd.**—Alterations and extensions to Villa 13, Meanwood Park Hosp., Tongue-la., Leeds. A to the Board, Park-par., Harrogate. Dep. £2 2s.

JANUARY 20.

***†Northern Ireland Hospitals Authority.**—Erection of stage II Muckamore Colony, Muckamore. Sec. Northern Ireland Hospitals Authority, 44-46, Queen-st., Belfast.

JANUARY 21.

***†Southampton CBC.**—Annexe at Portswood prim. sch. Boro' A. Dep. £1. Tenders by Feb. 18.

***†West Sussex CC.**—Additions, Granville House, Maltravers-st., Arundel. County A, Chichester.

JANUARY 22.

***†Isle of Ely CC.**—Alterations County Library, March and brick building, new fire station, Chatteris. County A, March. Dep. £2 2s. each. Tenders by Feb. 24.

***†Oxford City C.**—Extension, fire station, Horspath Driftway, The Glade. City A and Planning Officer.

***Plymouth City C.**—Conveniences on three sites. H. J. W. Stirling (A), City A, Seymour-rd. Dep. £3 3s. each.

JANUARY 24.

***Benfleet UDC.**—99 dwellings, Parkfields estate, Thundersley. D. Grudings, Clerk, Thundersley. Dep. £2 2s.

***Portsmouth City C.**—Four flats, Brompton-rd., Mile End, and 108 houses, Bedhampton site No. 3. City A, 1, Western-parade. Dep. £1 each.

JANUARY 25.

***Malvern UDC.**—Conveniences, Malvern Link. C. C. Judson, S. Dep. £2 2s.

***†Watford BC.**—Pavilion, Knutsford recreation ground. BE.

JANUARY 26.

***Hants CC.**—Secondary school, Fordingbridge. County A, Winchester.

***†Hants CC.**—Alterations and additions, Whitehill Bordon cty. sch. County A, Winchester.

Hemsworth RDC.—62 houses and 8 bungalows. E&S, Brierley Hall, Brierley. Dep. £2 2s.

JANUARY 28.

***†Bristol City C.**—Sec. sch., Monks Park, Horfield. City A. Dep. £2 2s.

***Worcestershire CC.**—Extensions Brook-st. school, Stourbridge. L. C. Lomas (F), County A, 14, Castle-st., Worcester.

JANUARY 29.

***†Doncaster CBC.**—Phases 1 and 2 Technical College for Further Education. Boro' A, 15, Southparade. Dep. £5 5s.

FEBRUARY 5.

***Havant & Waterloo UDC.**—Extensions, conveniences, Central Beachlands, Hayling Island. E&S, Park-rd. North, Havant. Dep. £3 3s.

FEBRUARY 9.

***Richmond (Surrey) BC.**—11 garages, Chisholm-rd. BE, Hotham House, Heron-court. Dep. £3 3s.

FEBRUARY 11.

***Grantham BC.**—46 houses, Belton-la BE&S. Dep. £2 2s.

FEBRUARY 14.

***Brighton CBC.**—Gymnasium for training college. BE&S, 26/30, Kings-rd. Dep. £3 3s.

***Chester RDC.**—22 houses and 4 flats, Christleton. T. C. R. Eaton (A), 16, White Friars. Dep. £3 3s.

***North Riding EC.**—Erection of Cleveland Technical College, Redcar. Gollins, Melvin, Ward & Ptnrs., architects, 15, Manchester-sq., W1.

***West Hartlepool TC.**—Erection of St. Joseph's RC prim. sch., Musgrave-st. T. A. Crawford (L), 80, Borough-rd., Middlesbrough. Dep. £5 5s.

FEBRUARY 16.

***Chelmsford BC.**—Sports pavilion, Coronation Park. BE. Dep. £2 2s.

FEBRUARY 21.

***Cheshunt UDC.**—16 dwellings, Brookfield-la. C. Culpin & Ptnr., architects, 3, Southampton-pl., WC1. Dep. £2.

***Jarrow BC.**—Building contracts. BE.

FEBRUARY 22.

***Preston CBC.**—Construction, Ribbleton Hall County sec. sch. BE&S. Dep. £3 3s.

FEBRUARY 28.

***Durham City C.**—24 flats, "The Chains," Gilesgate. City E. Dep. £2 2s.

MARCH 5.

***Eton RDC.**—18 dwellings, Moreland-ave., Colnbrook. Clerk, Windsor-rd., Slough. Dep. £2 2s.

NO DATE.

Calne BC.—24 "Trusteel" new Traditional houses at Lickhill estate. G. Brown & Ptnrs., architects, Brunel House, College Green, Bristol, 1. Dep. £2 2s.

PAINTING, ELECTRIC LIGHTING, MATERIALS, ETC.

JANUARY 21.

Caterham and Warlingham UDC.—S. (Materials.)
Rayleigh UDC.—E&S. (Materials.)
Wimbledon BC.—BE&S. (Materials.)

JANUARY 22.

Esher UDC.—E&S. (Materials.)

JANUARY 24.

Bebington BC.—BE&S. (Materials.)
Bradford City C.—City E&S. (Road materials.)
Dorset CC.—County S. (Materials.)
Gillingham BC.—BE. (Materials.)
***Lincoln (Kestevea) CC.**—Decorations, St. George's residential establishment, Stamford. County A, Sleaford.
Wallasey CBC.—BS. (Materials.)

JANUARY 26.

Greenwich MBC.—BE&S. (Materials.)
***Morecambe & Heysham BC.**—BE. (Materials.)

JANUARY 28.

Bethnal Green MBC.—TC. (Materials.)

JANUARY 29.

Aberdare UDC.—E&S. (Materials and road works.)
Havant and Waterloo UDC.—E&S. (Materials.)
West Ham CBC.—Heating apparatus for College of Technology, central library and Passmore Edwards' Museum, Romford-rd., E15. BE. Dep. £2.

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JANUARY 31.

Cumberland CC.—County S. (Materials.)
Manchester City C.—Cleaning and painting of 7,600 lighting standards, etc. City S.
Newcastle-under-Lyme BC.—BS. (Materials.)
West Suffolk CC.—County S. (Materials.)

FEBRUARY 1.

Bournemouth CBC.—BE. (Materials.)
Breconshire CC.—County S. (Road materials.)
Carmarthenshire CC.—County E&S. (Materials.)
Pembrokeshire CC.—County S. (Materials.)

FEBRUARY 2.

Radnorshire CC.—County S. (Materials.)

FEBRUARY 4.

***Chester-le-Street RDC.**—Building materials for 89 houses, Scorer's-la., Lumley; 28 bungalows, Cross-streets, Sacriston; and 17 houses, Pelton. Clerk.
Sutton and Cheam BC.—BE&S. (Materials.)

FEBRUARY 7.

Enfield UDC.—CE&S. (Materials.)

FEBRUARY 22.

***Preston CBC.**—Heating installation, Ribbleton Hall County sec. sch. BE&S. Dep. £2 2s.
***Preston CBC.**—Electrical installation, Ribbleton Hall County sec. sch. BE&S. Dep. £2 2s.

NO DATE.

***Jarrow BC.**—Housing supplies. BE.

ROADS, SEWERAGE AND WATER WORKS

JANUARY 21.

South Staffs Waterworks Co.—Duplicate main, Blithfield reservoir to Seedy Mill purification works, first instalment. Engineer-in-Chief. Dep. £3 3s.
***†Watford BC.**—Extensions to The Grove waterworks. L. C. Kimberlin, Boro' WE & Manager. Dep. £3 3s.

JANUARY 24.

Finchley BC.—Road improvements, small car park and layout works at Red Lion Hill estate, N2. BE&S. Dep. £3 3s.

JANUARY 25.

Southgate BC.—Widening and improvement of part of Vicar's Moor-la., N21. BE&S. Dep. £2 2s.

JANUARY 28.

LCC.—Cromwell-rd. extension, stage 1, Hammersmith, W6. Chief Engineer. Dep. £5.

JANUARY 29.

Amersham RDC.—Sewage pumping station at Little Chalfont. E&S. Dep. £2 2s.
City of Ely UDC.—(a) Site works at New Barns housing site; (b) sewer at Upherds-la; (c) demolition and clearance works at Cambridge-rd. camp. E&S. Dep. £2 2s.
Orpington UDC.—Making-up of Charterhouse-rd. (4 parts of), Nos. 2, 3 and 4, Orpington. E&S.
Skegness UDC.—Extensions at Richmond-drive pumping station. W. H. Radford & Son, Albion-chbrs., King-st., Nottingham. Dep. £3 3s.

JANUARY 31.

Oxfordshire CC.—Surface dressing of county roads, 1955-56. County S.

FEBRUARY 1.

Staines UDC.—Making-up of five streets. E&S. Dep. £2 2s.

FEBRUARY 2.

Romsey and Stockbridge RDC.—Sewerage at North Baddesley, contract No. 1. Lemon and Blizard, engineers, Castle-la., Southampton. Dep. £3 3s.
***Southend-on-Sea CBC.**—Foundations, etc., to temporary classrooms, Shoeburyness High School and Southend High School for Girls. Boro' A, 30, Alexandra-st. Dep. £2.

FEBRUARY 4.

Letchworth UDC.—Roads and sewers at Grange estate, stage V. E&S. Dep. £2 2s.

FEBRUARY 7.

Prestwich BC.—Construction of 4,850 yds. of storm water relief sewer, etc. BE&S. Dep. £5 5s.

FEBRUARY 12.

Truro City C.—Roads and sewers, Malabar estate, stage 2. City E&S. Dep. £3 3s.

FEBRUARY 21.

Banbury BC.—Main surface water drainage works, Banbury. S. D. & D. M. Watson, MM.ICE, 18, Queen Anne's Gate, SW1. Dep. £10 10s.

GENERAL BUILDING WORK (LONDON)

Croydon.—APPOINTMENTS.—TC are recommended to approve the appointment of the following for stage 2 of the new technical college and college of art: Hope Bagenal, FRIBA, consultant on sound transmission, Leaside, Hertingfordbury, Hertford; R. T. James & Ptnrs., consulting structural E, 6, Lower Grosvenor-pl., SW1; W. C. Inman & Ptnrs., quantity surveyors, 7, New Square, Lincoln's Inn, WC2; Winton Thorpe and Tunnadine, consulting E, 100, Victoria-st., SW1. E. H. Smith (Croydon), Ltd., 48, Wellesley-rd., Croydon, are to be invited to submit a contract price for stage 2 of the technical college and college of art based on the rates for stage 1.

Croydon.—COLLEGE.—Proposals for the erection of a public pavilion at Lloyd Park, at an estimated cost of £7,000, are recommended for TC's approval.

Holborn.—STORES EXTENSION.—Plans are being prepared by Searle and Searle, AA.RIBA, Amen House, Warwick-sq., EC4, for the extension of the Holborn departmental stores of A. W. Gamage, Ltd.

Kensington.—FLATS.—A scheme prepared by BE for the erection of 8 flats on a portion of the sites of Nos. 72-84, Cornwall-cres., at an estimated cost of £21,135, is recommended for RBC's approval by Hsg. Com. The scheme is capable of extension to 24 flats at a later date.

Kensington.—MAISONETTES AND FLATS.—Revised plans, based on MH&LG recommendations, prepared by S. Gordon Jeeves, MC, FRIBA, 61, Catherine-pl., Westminster, SW1, for the development of phase 1 of the Treverton-st. area are recommended for RBC's approval. They provide for the erection of 128 flats, 5 maisonettes, 3 shops and 12 garages, at an estimated cost of £347,919.

Kensington.—FLATS AND MAISONETTES.—MH&LG has approved in principle the removal of the 11 temporary bungalows on the sites of Nos. 249-263 (odd), Westbourne Park-rd.; Nos. 11, 12 and 13, Clydesdale-rd.; Nos. 1-7 (cons.), Clydesdale-mews; and Nos. 12-16 (cons.), Powis-gdns. Hsg. Com. recommend that sketch plans prepared by BE for the erection of 24 maisonettes and 6 flats on the site be approved by RBC. The estimated cost of the scheme is £66,878.

Kingston.—COUNTY HALL EXTENSIONS.—Surrey CC has approved proposals for the erection of a new wing between the Ashcombe wing and the western wing at County Hall at an estimated cost of £120,000.

Richmond.—PUBLIC HALL.—TC are recommended to submit the following for MH&LG approval: proposals for the erection of a public hall at Ham at an estimated cost of £11,700; also for the development of a site adjoining the Town Hall by the erection of three shops with basements and offices on the first and second floors, the provision of a lift and central heating, and the demolition of a single-storey building at an estimated cost of £43,000.

Romford.—SCHOOL CANTEEN.—TC are recommended to submit to M of E proposals for the provision of a new canteen at St. Edward's CE secondary school at an estimated cost of £9,500; also to approve the provision of a new enclosed swimming pool at Lodge Farm recreation ground.

Staines.—BIOLOGY LABORATORY.—The erection of a section of a new teaching block and the conversion of existing accommodation into a biology laboratory at Ashford county grammar school at a total estimated cost of £9,760 is recommended for Middlesex CC's approval.

Sunbury-on-Thames.—BRANCH LIBRARY.—Middlesex CC are recommended to approve the erection of a branch library and public convenience at High-st., Shepperton, at an estimated cost of £8,934.

Sutton and Cheam.—SCHOOL KITCHEN.—Proposals for the erection of a kitchen and dining-rooms for 500 pupils at Nonsuch County Girls' School at an estimated cost of £17,553, have been approved by Surrey CC.

Walthamstow.—GARAGE.—TC have been recommended to approve proposals for the erection of a garage at Low Hall Farm at an estimated cost of £20,000; also to seek MH&LG approval to the erection of a building adjoining the Assembly Hall at an estimated cost of £21,283.

Wanstead. — HOUSING DEVELOPMENT. — MH&LG have approved the development of the Aldersbrook Children's Homes site, comprising about 19 acres, for housing purposes. The present nursery block will eventually be ceded to Essex CC for conversion into a secondary school.

Willesden.—SCHOOL EXTENSIONS.—Middlesex CC are recommended to approve proposals for the completion of improvements at Brondesbury and Kilburn High School at an estimated cost of £5,846; also the erection of an additional science laboratory at the County Grammar School, estimated cost £7,090.

(PROVINCIAL)

Accrington.—Stanley Football Club propose erection of new stand at Peel Park to seat 4,000, £30,000 est.

Ashton-under-Lyne.—TC propose erection of 136 flats at Charlestown in 1955-6 programme, £195,130 est.

Barnsley.—TC to prepare detailed plans for new branch library on Kendray Estate.—Approved plans, shops, showrooms and arcade at Eldon-st. and Midland-st. for Cussins Group, Ltd., 6, St. Paulschmbrs., Sheffield. New warehouse at Burton-la., Monk Bretton, for Redfearn Bros., Ltd. New shop at Spedding Fold off Cheapside for Globe Tea Co., Ltd.

Barrow Ford.—UDC propose erection of 17 houses.

Billingham-on-Tees.—UDC to build 450 houses this year.

Blackburn.—EC seek loan £153,080 for erection of Witton Park Mixed Sec. Sch.—Seek Min. approval to include Phase 2 of extensions to Tech. Col. in 1955 programme.

Blyth.—Inquiry expected to be held in near future into proposed erection of £30m. power station near Blyth for British Electricity Authority.

Blyth.—Northumberland CC obtaining tenders for erection of four classrooms at Bebside CPS. County A, C. C. Brown, County Hall, Newcastle-on-Tyne.

Blyth.—TC plan houses as follows:—Gordon-road (165), Laverock Hall-road (41), Newsham-road (24), Patterdale-road (29), and Seaton Sluice (50). BE, D. W. Foster, Municipal Buildings, Blyth.

Blyth.—G. W. Wells, garage proprietor, Links-road, submitted to planning authorities outline scheme for garage and dance hall on site of his present garage, cost between £25,000 and £30,000.

Bridlington.—BC approved plans for Stage 1 of new community centre in the West Hill Estate.

Brierley Hill.—TC received allocation for 150 houses for 1955 programme.

Bristol.—TP Com. approved in principle preliminary plans submitted by Scott and Redwood, architects, 18, Gt. George-st., for erection of block of 30 flats on site of Bethesda Chapel, Gt. George-st., with basement garage, at est. cost £150,000.

Brownhills (Staffs.).—Messrs. Castings, Ltd., Walsall, propose erection of factory at Lichfield-rd. British Aluminium Castings Co., Ltd., Smethwick, propose new buildings at Lichfield-rd.

Burnley.—Eric Cowpe, Ltd., Castle Clough Mill, Hapton, propose erection of new factory in Rossendale-rd. area.

Carlisle.—City Council expected to appoint an outside architect to prepare plans for proposed Town Hall and Civic Hall.

Chadderton.—UDC Surveyor, F. W. Pexton, proposes erection of garage and maintenance depot.

Chelmsford.—TC asked TP Com. to consider advisability of making provision for helicopter station.

Chester.—RDC received allocation of 50 houses for erection in 1955. Approved in principle erection of 12 houses at Barrowmore and 12 at Upton. Messrs. Densons, Ltd., Chester, propose rebuilding of premises.

Chesterfield.—Cavendish Motors, Ltd., Holywell-st., propose alterations to showrooms and offices. Architect, F. W. Tempest, Mottistone Chambers, Regent-st., Mansfield.

Chesterfield.—RDC propose 46 houses at Beighton (Sothall Green), 40 in Mosbro Redevelopment area, 24 at Calow (Allpits Farm), 14 at Mickley and 18 at Killamarsh (Sheepcote Hill).—Approved plans for conversion of house into shop and office extensions at Heath-rd., Holmewood, for Heath and Williamthorpe Co-op. Soc., Ltd.—Chesterfield and District Co-op. Soc., Ltd., propose erection of new premises at Baden Powell-rd. Architects, Wilcockson & Cutts, 12, Saltergate, Chesterfield.

Chester-le-Street.—UDC received further allocation of 50 houses to be built this year. Plans by Surveyor.

Chester-le-Street.—RDC approved scheme of Birtley Parish Council to build crematorium.

Cockermouth.—RDC to invite tenders for 68 houses at Broughton Moor Brickworks site. Propose 18 houses at Oughterside.

Coventry.—TC to commence mid-1955 on erection of shops at Market-st. South.

Darlington.—TC received loan sanction for £23,200 for 16 houses on Springfield Estate and £12,924 for shops, flats and garages in Nickstream-lane.

Darlington.—EC to start work in spring on construction of laboratories and workshops as first instalment of new Technical College. BA, E. A. Tornbohm, Central Buildings, Darlington.

Darwen.—BC received allocation of 80 houses for erection in 1955.

Derby.—Sheffield Reg. Hosp. Board propose various improvements at Derbyshire Children's Hosp. Architects, T. H. Thorpe & Ptnrs., Friargate, Derby.

Derbyshire.—EC preparing working drawings for extensions at Chapel-en-le-Frith Sec. Mod. Sch.

Dublin.—Work to start soon on new university town to be built near Stillorgan. Project will cost more than £10m. and take 10 years to complete. More than 150 acres have been acquired and first section to be built will house architectural faculty. This will be followed by mechanical, electrical, and civil engineering schools.

Durham.—County EC looking for site at Chester-le-Street for erection of college for further education.

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Durham.—Ransome & Co.'s new factory at Annfield Plain to be expanded. Architect, J. H. Napper, Eldon-pl., Newcastle-on-Tyne.

Easton.—MH&LG upheld appeal by Messrs. Vaux and Assoc. Breweries, Ltd., Sunderland, against UDC's refusal to sanction erection of non-residential hotel in Skippers-lane, South Bank. Firm's A, Kitching and Co., 21, Albert-road, Middlesbrough.

Felling (Co. Durham).—UDC considering erection of combined swimming baths and community centre.

Gateshead.—Extensions to be made to factory of Pergs Carthew, Ltd., Team Valley Trading Estate. Architects, W. B. Edwards & Partners, Eldon-pl., Newcastle-on-Tyne.

Gateshead.—EC considering request from managers of St. Oswald's RC Sch. to erect three more classrooms at school. BE, G. F. Winters.

Glendale.—RDC to place contract for erection of 27 houses on Millfield housing estate. Plans by S. Council Offices, Wooler.

Glusburn (Yorks).—J. C. Horsfall & Sons, Ltd., propose erection of workers' hostel opposite their mill premises, £20,000 est.

Hartlepool.—TC to obtain tenders for erection of two blocks each of 30 houses. BE, J. H. Wood.

Hyde.—TC approved layout for 13 aged persons' bungalows, communal rooms and warden's flat at Walker-la.

Ince-in-Makerfield.—UDC to negotiate with J. Gaffbey & Son, Whelley, Wigan, for erection of further 20 houses to complete Battersby-st. site.

Irthlingborough.—UDC propose 36 houses and six bungalows on sites in Baker-st./Park-st. area, and 24 houses and six bungalows on Addlington-rd. Estate.

Jarrow.—TC approved in principle, long-term plan for construction of covered market of between 20 and 30 shops in Caledonian-road area. Another long-term plan provides for construction of new health centre. BE, H. W. T. Perkins.

Keighley.—West Riding CC propose erection of fire station at Bradford-rd. Plans by County A, H. Bennett, County Offices, Wakefield.

Leamington Spa.—BC propose new branch library at junction Valley-rd./Crown-way. Plans by Boro' A. Propose following in 1955 programme:—54 dwellings at Brunswick-st., 22 at Brook-st. and 124 at Lillington Estate.

Liverpool.—EC propose following in 1955 programme:—First instalment Mabel Fletcher Tech. Col., £190,000 est.; Second instalment City Tech. Col. for Women at Colquitt-st., £115,000 est.; additional accommodation at Col. of Building, £80,000 est.; extensions at Col. of Art, £59,000 est. City A, Dr. Ronald Bradbury, Blackburn Chambers, Dale-st., Liverpool.—Automatic Telephone Co., Ltd., Strowger Works, Edge-la., propose additional storeys to factory. A, Sir A. E. Shennan & Partners, 17, North John-st., Liverpool.—Richard Shops, Ltd., and John Collier, Ltd., propose erection of large new building at Ranelagh-st. and Great Charlotte-st., Liverpool. Plans by Staff A, E. E. Morgan.—Andrew Bros. (Bristol), Ltd., Regent-st., Liverpool, propose extensions to their factory.

Manchester.—TC propose erection of new primary sch. at Broadoak-la., East Didsbury; four-storey block of 15 maisonettes and three-storey block of six flats at Newcastle-st.. and Devonshire-st., Hulme; 68 flats and maisonettes at Butler-st., Holland-st. and Ridgeway-st., Ancoats; 14 maisonettes, 23 houses and six cottage flats at Wythenshawe-rd., Northern Moor; to negotiate with J. Arthur Rank Organisation, Ltd., and Essoldo Circuit (Control), Ltd., regarding erection of super cinema at Civic Centre, Wythenshawe. —Managers of St. Patrick's RC Sch. appointed F. A. Kerr as architect for improvements to Infants' Department.—Promoters of St. Clare's RC Sec. Sch., Blackley, appointed Weightman and Bullen, Liverpool, as architects for proposed school.

Manchester.—EC propose extensions to handicraft room, store room and armoury at Chorlton Grammar Sch. for Boys.—Reg. Hosp. Brd. received Min. approval for following:—Erection of two dormitories for children, £29,958 est. at Swinton Hosp.; erection outpatients department at Bury Gen. Hosp., £122,333 est.—Joseph Wilcox & Son, Collyhurst-rd., Collyhurst, propose extensions to factory. Architects, F. E. Costello & Associates, 126, Broad-st., Salford 6.

Morecambe.—Plans submitted to BC: Eight bungalows and eight garages at Lonsdale-rd. for Russell Bros., Ltd., Salthouse-rd., Barrow.

Morpeth.—RDC to build 16 aged people's houses at Widdrington; eight houses at Scotscap; and six houses at Longhorsley. Plans by S, J. R. Miles, Dacre House, Morpeth.

Newcastle-on-Tyne.—Plans by County A, County Hall, for home for aged people at Brough-gardens, Wallsend, approved.

Newcastle-on-Tyne.—Newcastle Reg. Hos. Brd., "Dunira," Osborne-road, Newcastle-on-Tyne, seek permission to build new hospital on Town Moor to replace existing St. Mary Magdalene Hosp. Board's Chief A, P. H. Knighton, MBE, ARIBA.

Northumberland.—CC seek permission to build six sec. mod. schools at Ponteland, Haltwhistle, Morpeth, North Sunderland, Alnwick and Tweedmouth. County A, C. C. Brown, County Hall, Newcastle-on-Tyne.

Northumberland.—Reavell and Cahill, Lloyds Bank Chambers, Alnwick, appointed architects by EC for construction of proposed Wallsend Cty. Sec. Mod. Sch. (project included in 1955-56 building programme).

Nottingham.—TC approved erection of new hostel at Clifton Estate, £52,691 est.

Oldham.—EC propose erection of changing room, showers and gymnasium store at Higginshaw Cty. Sch.

Ormskirk.—Lancs. EC approved erection of Sec. Mod. Sch. in 1955/56 programme, £93,000 est.

Penrith.—UDC to invite tenders for 76 new traditional houses at Milner Mount and 24 aged persons houses at Elm-ter.

Radcliffe.—TC received allocation of 40 houses for erection in 1955.

Richmond (Yorks.)—War Dept. informed RDC that because of reorganisation of Catterick Camp it will require 500 houses and has asked Ccl. to continue to build Council houses.

Ripon.—Diocesan Pastoral Com. approved scheme to build church on housing estate at Catterick Camp. Church designed by Professor A. E. Richardson, President of the Royal Academy.

Rugby.—Trustees of St. Matthew's Church propose improvements to premises. A. A. H. Gardner, 11, Eton-rd., Coventry.

Runcorn.—RDC propose erection of eight houses at Ship-st., Frodsham, and 10 houses at Cobbs Quarry, Appleton.

Scarborough.—BC propose erection of second storey to Watch House on West Pier. Approved plans, 10 flats at junction of Weydale-ave. and Givendale-rd. for G. Wright & Son, 52, Lady Edith's-ave., Newby. Architects, Baker & Clark, 7, York-pl., Scarborough.

Stalybridge.—BC propose further 25 houses at Ridge Hill Estate. Approved revised layout for 800 houses on this estate.

Stevenage.—Approval given by MH&LG to full scheme submitted by Council for 110 houses to be built by them on Weston-rd. site.

Stockport.—Work to commence early this year on proposed Peel Moor Sec. Mod. Sch., Heaton Moor. Plans by Sch. A, L. Yates.

Stockton-on-Tees.—Tenders to be considered shortly for erection of new Anglican church at Rosesworth, Stockton. Plans by Cordingley and Mcintyre, The College, Durham.

Stockton-on-Tees.—RDC approved their surveyor's plans for 24 houses at Preston and four bungalows at Longnewton.

Stokesley (Yorks.)—RDC to build 40 houses this year. Plans by S, W. Burnie.

Sunderland.—RDC received Govt. approval for building of 52 houses at Tunstall, cost over £70,000. Plans by S. C. Emmerson, Council Offices, The Esplanade, Sunderland.

Wallasey.—BC to invite tenders for 46 houses and 20 tenant ownership houses on site P6. Approved 50 houses and six bungalows at Franklin-rd., Moreton; 33 houses and six flats at Hudson-rd., Moreton; eight houses at Twickenham-dr., Moreton; six houses at Raleigh-rd., Moreton, and two houses at junction Stoney Hey/Grafton-rd., Moreton.

Wallsend.—Revised plans approved for factory additions in Kings-road for Monitor Patent Safety Devices, Ltd., but contract for work not likely to be let for another two or three months. A, H. Gatoff, 51, Grainger-st., Newcastle-on-Tyne.

Wallsend.—Northumberland EC approved preliminary sketch plans for new C of E Aided Prim. Sch. to accommodate 280 children. (Work, to be undertaken in two stages, to cost £17,000.) County A, C. C. Brown, County Hall, Newcastle-on-Tyne.

Wallsend.—MH&LG to reconsider TC's scheme for extending Wallsend Civic Hall..—TC considering sites in Tynemouth-rd. East, Coast-rd. (High Farm), and Coach Open for erection of public conveniences.—TC approved draft plans and estimates for erection of new branch library in Churchill-st. A, J. W. Hanson & Son, 123, Northumberland-st., Newcastle-on-Tyne.—Eldorado Ice Cream Co., Ltd., to extend their distribution depot in Oak-gr., Wallsend.—Council been allocated 250 houses for erection in 1955.—Northumberland EC plan erection of RC prim. sch. at Wallsend. Mr. R. Burke, Lambton House, Lambton-rd., Newcastle-on-Tyne, has been appointed A.

Warrington.—BC approved plans: New office building and distillation plant building at Latchford for British Aluminium Co., Ltd.

Whitley Bay.—BE (E. Roberts) to prepare plans for branch library at Seaton Sluice. Plans approved for four houses at Monkseaton-dr. for H. Jewels, builder, 55, Wembley-ave., Whitley Bay.

TENDERS

* Denotes *accepted.*
† Denotes *provisionally accepted.*
‡ Denotes *recommended for acceptance.*
§ Denotes *accepted subject to modification.*
¶ Denotes *accepted by H.M. Government Departments.*

Birmingham.—Following for EC:—Second superstructure contract of Colleges of Technology, Art and Commerce at Gosta Green. *Wm. Moss & Sons, Ltd., Queen's-rd., Loughborough, £442,350. Erection of Tile Cross Girls' Grammar School, *W. J. Simms, Sons & Cooke, Ltd., Nottingham, £248,212. Erection of Hilary Grove Junior and Infants' School, *E. Crowder, Ltd., South-rd., Birmingham, £152,948. Extensions at Bordesley Green Boys' Technical School, *J. F. Wootton, Ltd., Pinfold, Bloxwich, £94,858.

Blackpool.—113 houses and 72 flats, Grange Park, Layton housing estate. *Brown & Jackson, Ltd., Fleetwood. £218,750.

Chester.—150 houses at the Blacon estate for TC: *Thomas Warrington & Sons, Ltd., Park-drive, Hoole, £175,837.

Chester-le-Street.—Factory additions for D. and M. Cash, Ltd., clothing manufacturers. Architects, J. Gibson Cowe & Son, Central-chbrs., Chester-le-Street: *Wright and Kellett, Ltd., Ashley-ter., Chester-le-Street.

Cheveley.—20 "Unity" dwellings: *Aubrey Bell, Ltd., £28,202. Subject to Ministry approval.

Conway.—Single-arched road bridge to span river Conway (Route A.55). Consulting architect: Sir Percy Thomas, PP.RIBA. Consulting engineer: Mr. H. W. FitzSimmons. *Sir William Arrol & Co., Ltd., Bridgeton, Glasgow, £430,700.

Coventry.—New police headquarters building at Little Park-st. for TC: *Gilbert Ash, Ltd., 2, Stanhope-gate, W1, £311,187.

Dudley Colliery (Northumberland).—Pithead baths at Dudley Colliery, cost about £50,000. Plans by NCB Architects' Dept., Ashfield Towers, Gosforth: *Middlemiss Bros., Stepney Bank, Newcastle-on-Tyne.

Durham.—New wing at St. Hild's College. Architects: Cordingley and McIntyre, The College, Durham: *D. and J. Ranken, Ltd., Stockton-rd., Sunderland (subject to Ministry approval).

Erith.—Factory extension, drumming-out building and pumphouse for Hercules Powder Co., Ltd.: *Rush & Tompkins, Ltd., Sidcup, Kent, £18,218.

Hartlepool.—50 houses for the TC. Boro' Engineer, J. H. Wood, Borough-bldgs., Hartlepool: *Direct labour.

High Wycombe.—Factory for Stephens and Carter, Ltd. Architects, Brocklehurst & Cooper (F&A), Crendon-st., High Wycombe, Bucks: *J. M. Jones & Sons, Ltd., Maidenhead, £40,161.

Houghton-le-Spring.—50 houses at Hindson's-cres. South, Shiney-row, for the UDC: *Direct labour (approved by Ministry).

Kirkcaldy.—Clinic and crèche, and shopping centre consisting of 10 shops and 10 maisonettes, etc., for the corporation at the Templehill development district Excavation, brick, building and allied works: John Bent (Contractors), Ltd., Meldrum-rd., £7,619, and F. Walker & Co., Ltd., 26, Elgin-st., £13,687. Joinery, carpentry, ironmongery and allied works: Scottish Construction Co., Ltd., 129, St. Vincent-st., Glasgow, £3,153, and M. & G. Dingwall, Ltd., 3, Ramsay-rd., £8,978. Plumbing, sanitary engineering and allied works: J. W. Wishart, Ltd., 151, Links-st., £2,278, and A. D. Mitchell & Son, Ltd., 5, New-row, Perth, £2,524. Glazing and allied works: G. Lundie & Co., 30, Morrison-st., Edinburgh, £200, and James Thow, Ltd., 20, Thistle-st., £115. Plaster, lathing, cement and allied works: J. R. & A. Adam & Co., Ltd., 25, North-st., Lochgelly, £1,546, and Mason & Macewan, £2,211. Roughcasting: J. R. A. Adam & Co., Ltd., and A. Birrell, £428. Electricity fittings installation and allied works, £425, and Lamonts, Ltd., 159, Commercial-st., £868, and Walsh & Co., Ltd., 226, High-st., Leven, Fife.

Lanarkshire.—Police station and houses at a Glenmavis site. Mr. Samuel MacColl (A), architect, Housing Offices, County-bldgs., Beckford-st., Hamilton West. Excavation, brick, building and allied works: Gilchrist S. Lyon, Ltd., 74, Hallcraig-st., Airdrie, £3,172. Joinery, carpentry, ironmongery and allied works: James B. Terrence & Son, Ltd., 166, Station-rd., Shotts, £1,802. Slating, roughcasting and allied works: Maccartney & Reid, Ltd., 32, Glasgow-rd., Motherwell-Wishaw, £805. Plumbing, sanitary engineering and allied works: David Scott, Ltd., 27, Wellwynd, Airdrie, £805. Plaster, lathing and allied works: Henry Macdougall, 218, Station-rd., Shotts, £311. Electricity fittings installation and allied works: Neil Thomson, 118, Windmillhill-st., Motherwell-Wishaw, £102. Painting work: Archibald Biggar & Co., Ltd., 44, Clark-st., Airdrie, £125. Proposed police station and houses at Salsburgh:—Excavation, brick, building and allied works: Gilchrist & Lyon, Ltd., 74, Hallcraig-st., Airdrie, £3,258. Joinery, carpentry, ironmongery and allied works: Torrence & Son, Ltd., 166, Station-rd., Shotts, £1,700.

¶London (Admiralty).—Particulars of contracts over £1,000 in value:—

Berkshire: Building works, J. M. Jones & Sons Builders, Ltd., Highway Works, Bath-rd., Maidenhead. *Middlesex:* Building works, W. H. Gaze & Sons, Ltd., 19-23, High-st., Kingston-on-Thames, Surrey. *Hants:* Civil engineering works, J. Mowlem & Co., Ltd., Byng-st. Gate, Millwall Dock, E15.

LCC.—13 blocks of flats, maisonettes and houses, Bentham-rd. site, Hackney: *Rush & Tompkins, Ltd., Sidcup, Kent, £856,512.

LCC.—10 blocks of flats, maisonettes and shops, Barchester-st. site, Poplar: *Rush & Tompkins, Ltd., Sidcup, Kent, £644,988.

London (Metropolitan Police)—Contracts placed by Metropolitan Police:—
Erection and completion of 30 flats, Finchley-road, Childs-hill. *Tersons, Ltd. £89,961.

London (Metropolitan Police).—Two blocks of flats and maisonettes (48 married quarters), Stepney Way, E1: *Rush & Tompkins, Ltd., Sidcup, Kent, £128,507.

London (MOW).—Contracts placed by Ministry of Works for week ended January 1:—

London: Heathfield-road, SW8, and Dumbarton-road, SW2, erection of 2 senior officers' houses, Orchard & Peer (London), Ltd., 32, Leopold-road, SW19. *Buckinghamshire:* SO and TE Slough, alterations and additions to garage block, E. E. Reed & Co. (Builders), Ltd., Christmas-lane, Farnham Common, Slough. *Cornwall:* PO Garage, South Street, St. Austell, alterations and additions, J. Williams & Co. (Cornwall), Ltd., South-street, St. Austell. *Derbyshire:* Ministry of Fuel and Power, SMRE, Harpur Hill, new building for vertical tube experiments, R. Green & Sons (Chapel-en-le-Frith), 117, Market-street, Chapel-en-le-Frith. *Dorset:* Admiralty Housing Site, HMS "Osprey," Wyke Regis, erection of 27 officers' houses, G. J. Furneaux, Ltd., 251, Barrack-road, Christchurch, Hants. *Essex:* Epping Hill Hall, erection of 4 terrace houses, F. M. Noble & Son, Ltd., High-street, Chipping Ongar, Essex. *Hampshire:* IFV Farnborough, jig bore and grinding bay and tool room, Crosby & Co., Ltd., Lion Works, West-street, Farnham, Surrey. *Lancashire:* Queen's-road, Manchester, erection of 60 houses for the prison commission, The Unit Construction Co., Ltd., 21A, Brook-street, Knutsford, Cheshire. *Middlesex:* GPO Site (Government buildings), Willow Tree-lane, Yeading, internal decorations, J. W. Green (Painters), Ltd., 171, Graham-road, SW19. *Nottinghamshire:* Government Buildings, Chalfont-drive, new car park and concrete roadway, G. A. Pillatt & Son., Ltd., Quorn-road, Notts. *Oxfordshire:* Telephone Exchange, Oxford, hollow tile floors and roofs, Hinkins & Frewin, Ltd., Grantham-street, Oxford. *Yorkshire:* Telephone Exchange & TRS, Marton-road, Middlesbrough, erection of superstructure, A. Roberts & Co., Ltd., 79, Eccleston-square, SW1.

Manchester.—Sports pavilion at Annie Lee Playing Fields, Gorton, for TC: *F. Marsland, Stockport. Erection of a branch library at Queen's Park: *Moston Brick and Building Co., Ltd., Kenyon-la., Collyhurst, Manchester. Alterations and additions at Mount-rd. Cleansing Depot, Gorton, Manchester: *G. W. Dawson, Ltd., Manchester. 146 houses at the Langley estate for TC: *A. Locke, Ltd., Urmston, near Manchester. 68 maisonettes and flats at Ridgway-st., Ancoats: *Direct labour.

Newcastle-on-Tyne.—Factory additions, City-rd., for E. Kahn & Co., Ltd., furniture manufacturers. Architect, Henry Gatoff, 51, Grainger-st., Newcastle: *Direct labour.

Newmarket.—Eight houses and four bungalows at Bottisham for RDC: *R. Edwards & Son, £16,350.

Nottingham.—492 "No Fines" houses and 24 garages at the Clifton estate for TC: *Geo. Wimpey & Co., London, £620,940. 10 houses west of Wells-rd.: *A. G. Clower, Ltd., Mansfield-rd., Daybrook, £18,882.

Paisley.—200 houses at the Moredun hsg. development at Stanley-st.: *James Miller & Ptnrs., Ltd., 20, George-st., Edinburgh.

Regent's Park Zoo.—Quarantine and sanatorium block for Zoological Society of London: *Rush & Tompkins, Ltd., Sidcup, Kent, £39,212.

Rutherglen.—Public library buildings at Bankhead Protestant primary school. William R. Watt (F), County A, Education Offices, Albert-st., Motherwell-Wishaw. QS, Baxter, Dunn & Gray, 255, Bath-st., Blythswood, Glasgow. Excavation, brick, building, concrete and allied works: Robert Stewart & Co., Ltd., 286, Clyde-st., Glasgow, £3,159. Joinery, carpentry, ironmongery, glazing and allied works: John C. Burns & Co., Ltd., Church-st. General Works, Larkhall, £2,282. Steel windows and casements and allied works: *Rae Metal Casements (1932), Ltd., Knowseley Works, Stanley, Liverpool, £286. Bitumen felt roofing and allied works: Stirling's Bitumen Products, Ltd., Macgowan-st., Paisley. Roughcasting and outside cement works: James Russell, 162, Main-st., High Blantyre, £87. Plumber, sanitary engineering and allied works: Robert White, Station-rd. Sanitary

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Works, High Blantyre, £321. Plaster, lathing, tiling and allied works: Lanarkshire County Direct Labour Dept., Albert-st., Motherwell-Wishaw, £132. Heating engineering installation and electrical fittings installation and allied works: Same contractors as last, £540 and £369.

Scottish Special Housing Association, Ltd.—Contracts placed November 24 to December 21:—*Site Servicing*: Park Farm, Port Glasgow (46 Unitroy), Jas. Jackson & Sons, 9, Laigh-rd., Beith, tree felling. Beith-rd., Johnstone (66 Stuart), W. Prentice & Son, Ltd., Caledonian Works, Larkhall, handrails. Cunninghar, Tillicoultry (50 traditional), SE Scotland Electricity Board, Stirling, electrical. Bilston, Midlothian (20 traditional), N. Thomson, Croft-st., Dalkeith, plaster; J. Loughbridge, 7, Mid-st., Bathgate, paint; Boyne, Smith & Wyllie, 20, Nelson-st., Edinburgh, electrical; Wm. McLean, 12, South Fort-st., Edinburgh, slater and roughcast: Seton Construction Co., Ltd., The Harbour, Port Seton, carpenter and joiner; J. Hadden & Son, Grange Loan, Edinburgh, plumber; N. Thomson, Croft-st., Dalkeith, excavator, concretor and brick; W. Marshall, 155-7, Morrison-st., Edinburgh, glazier. Aberdour-rd., Dunfermline (20 Dunedin), Alliance Construction (Scotland), Ltd., 7, Ward-rd., Dundee, all trades. Kirkhill, Ardrossan (50 Trad. s-saving), Wm. Rowe, 8, Glasgow Vennel, Irvine, plumber; W. Shaw & Co., 160, High-st., Irvine, plaster. Kirkhill, Ardrossan (50 Trad. s-saving), Browne & McMaster, 2, West-rd., Irvine, paint; Boyne, Smith & Wyllie, 22, Nelson-st., Edinburgh, electrical; A. Wright, Ltd., 232, High-st., Ayr, glazier; Whyte (Roofing), Ltd., Bishopriggs, Glasgow, roof tiler & roughcast. Drumachlie, Brechin (22 Trad. s-saving), Laird Brothers, Forfar, brickwork, etc. Delphwood, Tullibody (228 traditional), John Gow & Sons, Ltd., Main-st., Sauchie, stockproof fencing. Pathhead, Midlothian (44 no-fines), Northern Sportsground Construction Co., Ltd., Young-st. Lane, Edinburgh, front and divisional fencing. Wester Langlee, Galashiels (50 traditional), Scottish Gas Board, Galashiels, gas services; SE Scotland Electricity Electrical Board, Galashiels. Cunninghar, Tillicoultry (50 traditional), D. & J. Ogilvie (Builders), Ltd., Bridge of Allan, brick. Cemetery-rd., Buckhaven (130 Cruden), A. D. Welsh, Liquorstane, Falkland, Fife, boundary fencing. Kirkhill, Ardrossan (50 trad. s-saving), Smith & Walker, Garnock View-ter., Kilwinning, brick, etc., and carpenter and joiner. Brora, Sutherlandshire (12 traditional), J. G. Coghill, Manse-park, Brora, fencing. Borestone, Stirling (56 no-fines), Scottish Gas Board, Stirling, gas services. Harthill, Lanarkshire (60 traditional), Geddes & Springthorpe, 104, Raeburn-pl., Edinburgh, fencing. Glebe, Lerwick (14 traditional), Jas. J. Smith, Harbour-st., Lerwick, paint. Drumachlie Loan, Brechin (22 traditional s-saving), House Builders (Montrose), Ltd., 17-19, Apple Wynd, Montrose, plaster; A. Clark, Ltd., 78, Strathmartine-rd., Dundee, roof tiler and roughcast; James Thow, Ltd., 14, Nethergate, Dundee, glazier; Boyne Smith & Wyllie, 22, Nelson-st., Edinburgh, electrical; J. A. Hutcheon & Son, 11, Market-st., Brechin, paint; Fettes & Stephen, 43-45, Lower Hall-st., Montrose, joiner and carpenter; James Findlay, 6, Hume-st., Montrose, plumber.

Work undertaken by SSHA Direct Labour Organisation.—*Site Servicing*: Currie, Midlothian (88 Dunedin), 2nd stage. Balerno, Midlothian (44 no-fines), culverting burn. Cunninghar, Tillicoultry (132 various), laying only water mains. Park Farm, Port Glasgow (106 Stuart), 1st stage (additional authorisation). Shawwood, Catrine (40 traditional space-saving), road and footpath surfacing. Woodwynd, Kilwinning (100 traditional), remedial work to roads. *House Erection*: Borestone, Stirling (50 no-fines), all trades.

Shipley.—54 " Gregory " flats at Wood End estate for UDC: *Gregory Housing, Ltd., 27, Chapel-rd., Worthing, £69,509.

South Shields.—28 houses in Horsley Hill-rd. *Milton Swales, Ltd., Imeary-st., South Shields.

Stokesley.—Workshops, office and house at Tellesby Hall, Marton, for RDC. *Robinson (Contractors), Ltd., Stokesley, Yorks.

Tenby.—107 dwelling houses Marsh-road, Tenby, for BC. *Hadsphaltic Construction Co., Ltd., Ibex House, Minories, EC3. £177,973.

Trowbridge (Wilts).—28 dwellings at the Studley Green estate for UDC: *T. Holdoway & Sons, Ltd., of Westbury, £39,224.

Wallsend.—Factory and warehouse near Bewicke-rd. for Houseman and Thompson, Ltd., Jesmond-rd., Newcastle-on-Tyne. Architect: R. T. Smith, 37, Glendale-ave., North Shields. *Benjamin Peel, Ltd., East Mill Works, Tynemouth.

Wantage (Berks).—12 houses on the Windmill Hill estate site at East Challow: *J. Hedgecock, of Faringdon, £19,103.

West Bromwich.—Following for BC:—20 houses at Tanhouse estate: *Sir Alfred McAlpine & Son, Ltd., Waterloo-rd., Wolverhampton, £26,083. 30 flats at Yew Tree estate: *Direct labour, £41,432.

West Ham.—Eight houses, 10 maisonettes, 71 flats, 10 garages at St. John's-rd., E16. *A. E. Symes, Ltd., Carpenters-rd., E15. £143,987; 10 houses, 45 flats, 18 maisonettes, 1 shop, 16 garages at Forest-la., E15. *Leslie & Co., Ltd., St. James House, Kensington-sq., W8. £124,690.

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